

MARINE REVIEW.

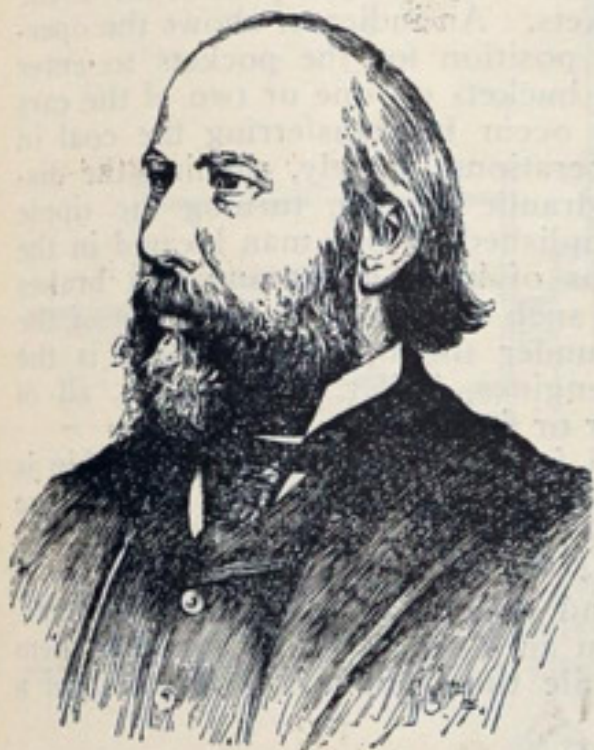
VOL. XVI.

CLEVELAND, O., OCTOBER 7, 1897.

No. 15.

The Lakes will Hold the Grain Trade.

Buffalo, N. Y., Oct. 7.—The name of James J. Hill will soon be as familiar in Buffalo as it is in the northwest. A few years ago this man of great business affairs found difficulty in dealing with the several corporations that were in control of the package freight business of the lakes, as well as the railways leading from Buffalo to the Atlantic seaboard.



JAMES J. HILL.

He was determined to provide eastern connections for his Great Northern railway, and he built at Cleveland a fleet of big freight steamers that were thought to be far in advance of the traffic that might be expected for them. They found business—plenty of it—and were the means of enabling the Great Northern to provide for its export business eastward from Buffalo and at the same time secure a full share of west-bound freight. Then followed the building of two passenger steamers, costing fully \$1,500,000, which were said by a great many to be twenty years in advance of their time, but which are reported to have made money during the passenger season just closed.

Now Mr. Hill is engaged in another undertaking that will be far-reaching in its effects. For some time past a great deal has been heard of the loss of grain trade to

the lakes through competition from southern routes. Western grain intended for export has been going to Galveston, New Orleans, Newport News and other places in the south. The Great Northern grain elevator, an immense steel structure of new design and of 3,000,000 bushels capacity, opened here this week, will mark the beginning of a reduction in handling charges on grain at Buffalo that will overcome, to a large extent, the southern competition from which so much has been feared. Already the big grain shippers of Chicago—Armour, Bartlett, Frazier & Co., and others,—who have more cause than the northwestern roads to fear southern competition, have become interested in Buffalo elevators, and with general application of the plan of a through rate from the grain fields to the Atlantic seaboard, the business will be retained to the lakes.

"The cause for announcement of a dissolution of the Buffalo elevator pool," says one of the best-posted vessel men here, "is very plain, in view of the opening of this new elevator, as well as those in which Chicago and New York grain shippers are interested. These houses were built to reduce elevator charges, and of course the pool must pass out of existence or be reorganized as a result of marked reductions in charges. It is plain also, when we view the action of Counselman & Co. at Erie, and when we know the new elevators here to be a part of the Great Northern system, Armour system, etc., that the tendency among these big grain firms and railway companies is to extend their control of elevators from the west to Buffalo and then to ports on the Atlantic. In order to protect their interests in country elevators in the west, and in Chicago and Duluth, these concerns are forced to extend their operations to this point as well as to the seaboard. My own idea of the situation in Buffalo is that the elevating association will be forced to go out of existence as announced with the close of the present year. The Great Northern will not do much business this fall. Next spring there may be a slashing of rates for a time, but it would seem that an elevating association at this point is as necessary as a clearing house for banks. I say this because of the absolute necessity at times of shifting cargoes and dividing cargoes among various houses. This can only be done through a general organization of some kind. A new association will very probably be formed, from which the great number of old worn-out elevators that have been drawing tribute will be excluded. All this will mean reduced elevator charges, but it will not concern the vessel owner directly; he will be interested in it only to the extent that it will be one more step in the direction of increasing the business of the lakes and guarding against competition from other routes. It is the old story of the consumer of the grain getting the advantage, if anybody is in fact benefited by the constant movement toward lower costs that has been a ruling element in all branches of trade throughout this country of late."

The new Great Northern elevator, which cost about \$4,000,000, is undoubtedly the greatest structure of its kind in the world. It is a part of the Great Northern Railway system, on the railroad lines of which one-sixth of the wheat crop of the United States is said to be raised, and which includes four elevators at Minneapolis, St. Paul and Superior of about 6,500,000 bushels aggregate capacity. This elevator has a frontage on the Blackwell canal of 296 feet, a depth of 120 feet, and a height of 167 feet from the level of the dock. The foundation begins on solid rock, 48 feet below the water, and is composed first of 6,000 piles, on which is a superstructure of heavy masonry, including 266 cars of stone. The entire building is composed of steel and brick. In all the frame, rafters, roof, floors, bins and machinery, there is nothing whatever that will burn. The circular steel tanks, which are the greatest feature of the structure, are placed in three ranks of ten each, with two inner rows of smaller tanks to utilize the spaces between the large ones. The capacity of the thirty large tanks is 85,000 bushels each, a total of 2,550,000 bushels; and of the eighteen smaller tanks, 18,000 bushels each, a total of 324,000 bushels,

making a grand total of 2,874,000 bushels. These are also smaller shipping, storage and other bins, in the elevator, sufficient to bring the entire capacity to something more than 3,000,000 bushels. These forty-eight bins, as well as the smaller ones, are of steel, from one-fourth to a half inch in thickness, the material weighing 6,000 tons. There are 3,500,000 bricks in the structure, the bins being enclosed by a continuous wall, besides the 230,000 in the ground floor of the elevator.

The equipment includes two conveyor belts 60 inches wide and 740 feet long; ten legs inside the elevator, and one in each of the three movable towers on the water side; twenty-seven garners and ten scales with a capacity of 1,400 bushels each; twenty-two shipping bins of 1,400 bushels each. The three legs on the river side of the elevator can each be moved so as to be suited to different vessels unloading at the elevator. Each leg is provided with its own motor. The motors are stationary in the marine towers and are connected with the marine legs by rope drive wheels, the electric current reaching the motor by a system of trolley wheels that take up the current after the fashion of electric cars. These legs are each capable of elevating 20,000 bushels of grain an hour from a vessel, or 600,000 bushels in ten hours, altogether.

There are tracks for one line of cars inside and two lines outside the elevator, all cars being moved by electricity. The discharging capacity of the elevator is 300 cars a day, of ten hours, and 50,000 bushels an hour to canal boats. The entire floor of the structure that has been built on the top of the upright system of circular steel bins, is filled with garners, scale bins and machinery for handling the grain, prominent among the many others being the motors for transforming the electric current into power. There are in all four 100 horse power motors, eleven 50 horse power, and two 20 horse power, making a total of seventeen motors, exerting 940 horse power. Steel bulkheads divide each of the large circular bins into three compartments, making it possible to store three sorts of grain in each bin at a time. The grain is drawn out of the bottom of each compartment, and elevated to the weighing bin at the top of the elevator before the delivery to car or canal vessel.

Official Ore Figures—Lake Freights.

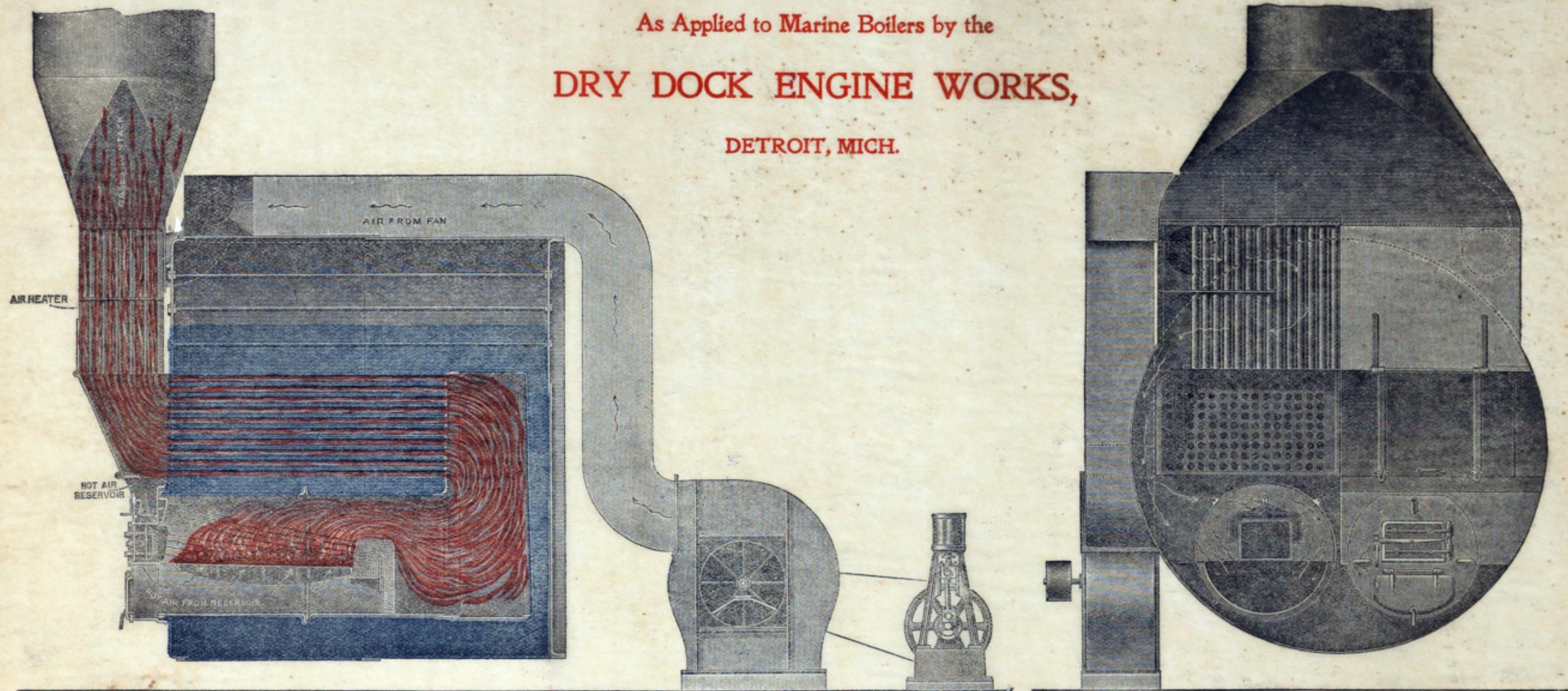
The total output of iron ore to Oct. 1 is 9,807,571 gross tons, against 8,276,092 tons on the same date a year ago, or a gain of 1,531,479 tons. Shipments during September aggregated 2,095,433 tons, against 2,296,578 tons during August, which latter month was the greatest month in the history of the lake ore trade. These figures are correct to a ton. They are made up from reports of railway managers to the association of ore shippers in Cleveland. An output of nearly nine million tons to Oct. 1 means shipments for the full season exceeding eleven millions, but not thirteen millions, as estimated in ridiculous dispatches that have been going out from Cleveland of late. There is about as much sense in talking of an output of thirteen millions as there would be in putting the figure at twenty millions. The mines could not, in the first place, produce or move from remaining small stock piles, in two months, the four million tons that would be necessary to bring the output up to thirteen millions, and railroads, which are now pushed for cars everywhere, would be crowded in handling it under the most favorable circumstances.

But the output will be eleven million tons—probably eleven and a half—and this in itself will be more than a million tons in excess of any previous year. It will clean up stock piles everywhere in the Lake Superior region; practically all of it is sold, and the result will be active operations in all of the mining districts throughout the coming winter. One of the most active sections will be the Gogebic range, where the Carnegie-Oliver interest of Pittsburg, which recently acquired control of the Norrie and Tilden mines, proposes to mine 2,000,000 tons. Their lease of the Tilden from John D. Rockefeller provides for a minimum output at that mine of 400,000 tons, an amount largely in excess of the average for previous years. Other details of this deal are also coming to the surface. The Pittsburg interest is in possession of about 90 per cent. of the stock of the Metropolitan Iron & Land Co., controlling the Norrie group, and the greater part of this stock is said to have been secured at \$20 a share. The capital of the Metropolitan company is \$2,500,000, divided into 100,000 shares of \$25 par value each. Although this deal will practically take the Carnegie interest out of the ore market, it is the opinion of some ore men that they will find difficulty in mining 2,000,000 tons annually from these properties. The amount they will require from other producers will, however, be so small in any event that it will not be a factor in the market.

Within the past few days the soft coal movement by lake has assumed immense proportions, but the shippers have held informal meetings, acting jointly in their efforts to hold rates as low as possible, and have been quite successful. As an instance of their success, it may be noted that during all of last week the demand for vessels to take coal to the head of Lake Superior was very much in excess of the number of vessels offered, but the rate was not advanced to 25 cents until Tuesday of this week, when a Buffalo vessel broker wired Cleveland owners offering that figure, in an effort to get vessels to take soft coal at Ohio ports for an outside interest, probably the Northern Steamship Co. Vessel owners are quite confident, however, of higher rates all around on coal when the lake fleet becomes scattered by a storm or two. It is not thought wage differences with coal dock laborers at the head of the lakes will cause a suspension of the heavy coal movement now under way. The dock companies will be forced, under the pressure of the situation, to settle with the men.

HOWDEN HOT DRAFT SYSTEM

As Applied to Marine Boilers by the
DRY DOCK ENGINE WORKS,
DETROIT, MICH.



SECTIONAL VIEW.

COVERING REMOVED. VIEW COMPLETE.

The above cuts represent sections of a single boiler equipped with the Howden Hot Draft System. The engine and blower for supplying draft can be placed in any convenient place, preferably in the engine room. The hot air from engine room is taken in and forced through the air duct to air heater, where it is heated by passing among vertical tubes, through which the escaping gases from the boiler pass. The heated air is led down in ducts around breeching and delivered under and over grates in sufficient quantities to get perfect combustion. The arrows illustrate the passage of air from blower in above cut. This is in general the principle of the Howden System.

35 LAKE STEAMERS (Over 45,000 I. H. P.)

EQUIPPED WITH THE

HOWDEN BY THE DRY DOCK ENGINE WORKS, DETROIT, MICHIGAN. HOT DRAFT

TOTAL EQUIPMENT IN THE WORLD,

1,383,500 I. H. P.

WHAT IT DOES.

Causes Large Saving in Fuel.

Saves from 10 cts. to 50 cts. per ton in
quality of fuel used.

Increases Speed, Carrying Capacity
and Earnings.

HOW IT DOES IT.

Maintains an Even Draft.

Furnishes Hot instead of Cold Air to
the Furnaces.

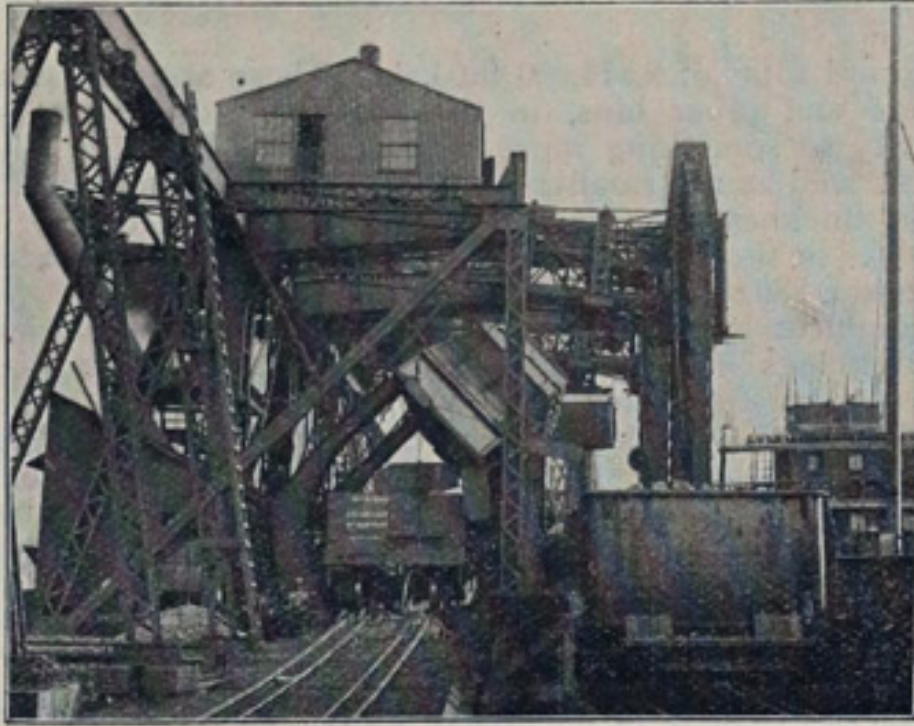
Makes all the Steam any kind of
Engine can use.

FREE WINTER DOCKAGE FOR STEAMERS WHOSE OWNERS CONTEMPLATE A HOWDEN EQUIPMENT.

ONE CENT A TON.

A CLAIM THAT IS MADE REGARDING THE COST OF LOADING SOFT COAL AT LAKE ERIE PORTS WITH CAR DUMPING MACHINES.

A description of car-dumping machines recently completed by the Brown Hoisting & Conveying Machine Co. of Cleveland has just been given out by that company. There are five of these machines now in

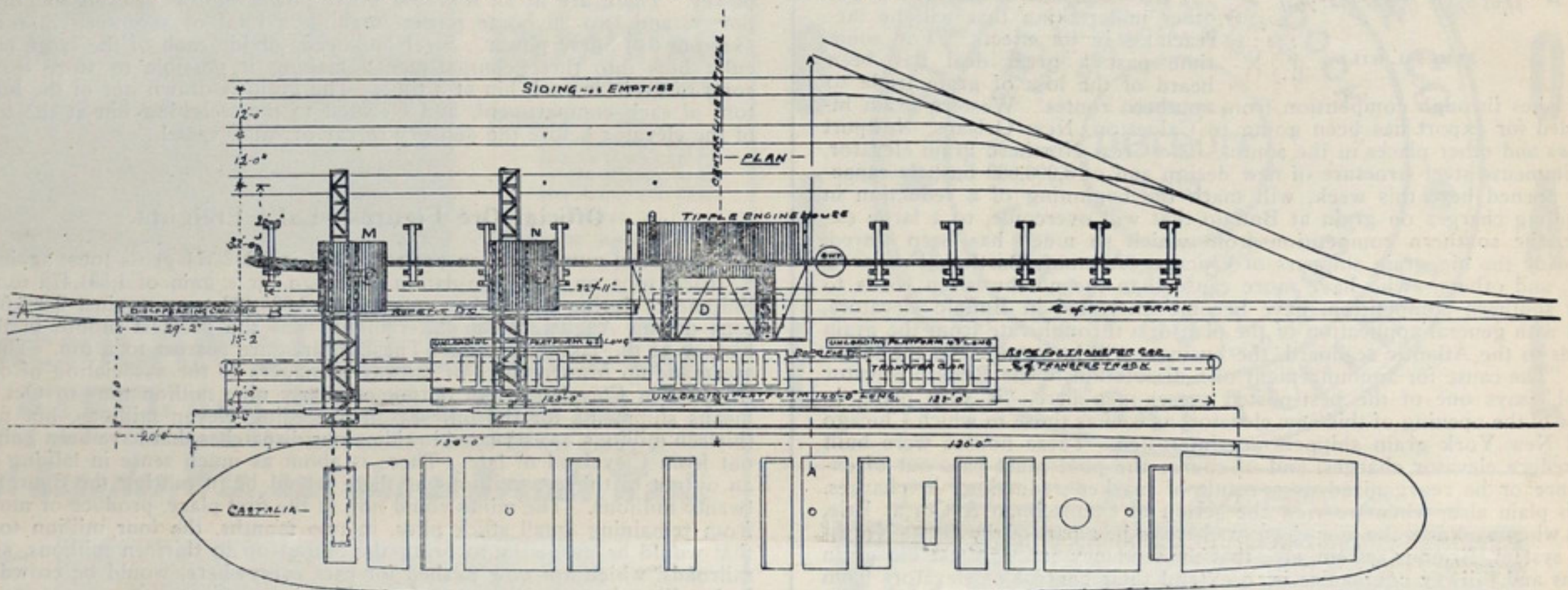


CAR READY FOR DUMPING.

operation at Lake Erie coal docks—one each at Ashtabula, Cleveland and Huron, and two at Toledo. Illustrations of the machine on the C. & P. Ry. Co.'s dock, Cleveland, appeared in the Review of June 10, but the description was meager. It is claimed that the cost of operating a complete plant of this kind, including the wages of the men, necessary

and lock, and the tippie is ready for the next car, which, as it is pushed into the tippie by the disappearing carriage, pushes the empty car out at the other end, where it runs away by gravity and is automatically switched onto a side track. One man is on the loaded car as it is run into the tippie. He sees that the car is properly placed and that the hydraulic clamps are properly adjusted, and also attends to the fastening and unfastening of a pair of end-doors or guards, which are constructed of iron and wood and attached by means of quick-acting screw clamps to the top of each end of the car before turning it over, to prevent the spilling of any of the coal over the car ends. These guards are suspended by a chain and counterweight from the stationary frame-work of the tippie and are always within convenient reach. After the car is emptied and turned back to the proper position for running it out of the tippie, the man unclamps the guards and waits for the next loaded car. There are eighteen buckets, each of six tons capacity, placed on three special bucket cars, which travel on a track extending along the dock directly in front of the tippie. These cars are fastened at a convenient distance apart to a pulling line, by means of which they are placed in front of the tippie to receive the coal from the pockets. An indicator shows the operator whether the car is in its proper position for the pockets to enter the buckets without interference. The buckets on one or two of the cars are kept filled, so that no delay may occur in transferring the coal in the buckets to the ship. All these operations, namely, running the disappearing carriage, operating the hydraulic clamps, turning the tippie and moving the bucket cars are accomplished by one man located in the tippie operator's house (H), by means of hand levers and foot brakes within easy reach, and his position is such that he is in full view of the work under his direction. Directly under the operator's house is the tippie engine room, containing the engines, boiler, pumps, etc., all of which are looked after by one engineer or fireman.

The work of transferring the coal from the buckets into the ship is accomplished by two conveyors or traveling cranes (M) and (N). These cranes travel independently up and down the dock at the will of the operator at a maximum speed of 500 to 600 feet a minute. Each crane is fitted with its own engines, boiler and operating mechanism complete. The back ends of the cranes travel on an elevated track, allowing them to pass over the tippie structure, while the front end, consisting of a

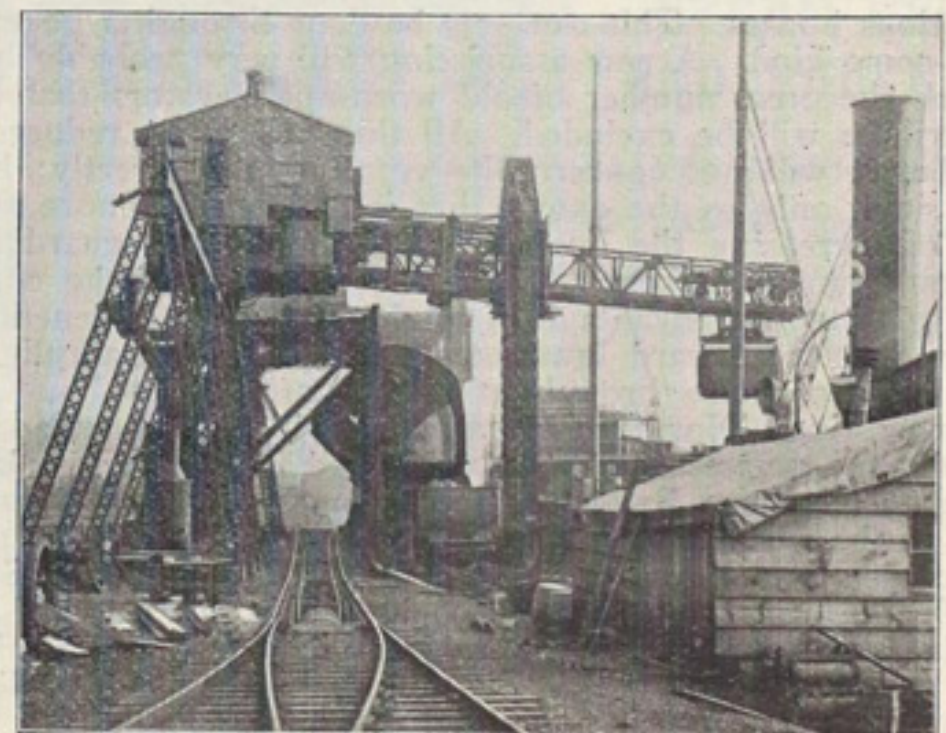


Plans of Brown Type of Car Dumping Machine.

fuel, oil, waste, etc., and allowing a fair amount for depreciation, does not exceed \$40 a day. Plants of this kind are guaranteed to load from cars holding not less than twenty-four tons each, 3,000 tons in ten hours, and it is claimed that in actual practice, with the ordinary run of gondola and hopper-bottom cars, the capacity will easily reach 4,000 tons, which amounts to loading a boat with coal for about one cent per ton. A very low cost could also be attained by the ordinary system of dump cars, pockets and chutes used in the ore trade and in the hard coal trade, but it is well understood, of course, that before car-dumping machines came into use, soft coal was shoveled by large forces of men and at great expense from cars to buckets. One great aim, all the time, has been to avoid breaking the coal, and officials of the Brown company claim that their machine possesses special advantages in this regard and was designed with this end particularly in view.

Machines at these several Lake Erie ports are all alike except in some minor details, and the views and sketch on this and the opposite page, showing the general plan of plant, will aid in the explanation of how they are operated. The railroad companies, if not operating the machines themselves, arrange to deliver the loaded cars to the coal shippers or dock companies operating the plants. The cars are run onto the elevated tracks at A, and then run down by gravity, one at a time, as wanted, to B; from this point the disappearing carriage, which consists of a small counter-weighted car, with a bumper at one end and propelled by means of a pulling line, pushes the car into the tippie D. In the tippie frame the car is securely held by a hydraulic clamping device, which takes hold on the top of both sides of the car, the clamps being designed with ample adjustment to allow for the various widths and heights of the different cars. When securely clamped the car is turned over sideways, allowing the coal to gradually slide into six pockets, which turn over into six buckets. When at the bottom of the buckets the pockets automatically unlock, allowing the sides to fall back against the sides of the buckets, and when the tippie is turned back in the operation of returning the empty car, the pockets are drawn out, leaving the coal in the buckets. As the tippie is lowered the pocket doors automatically close

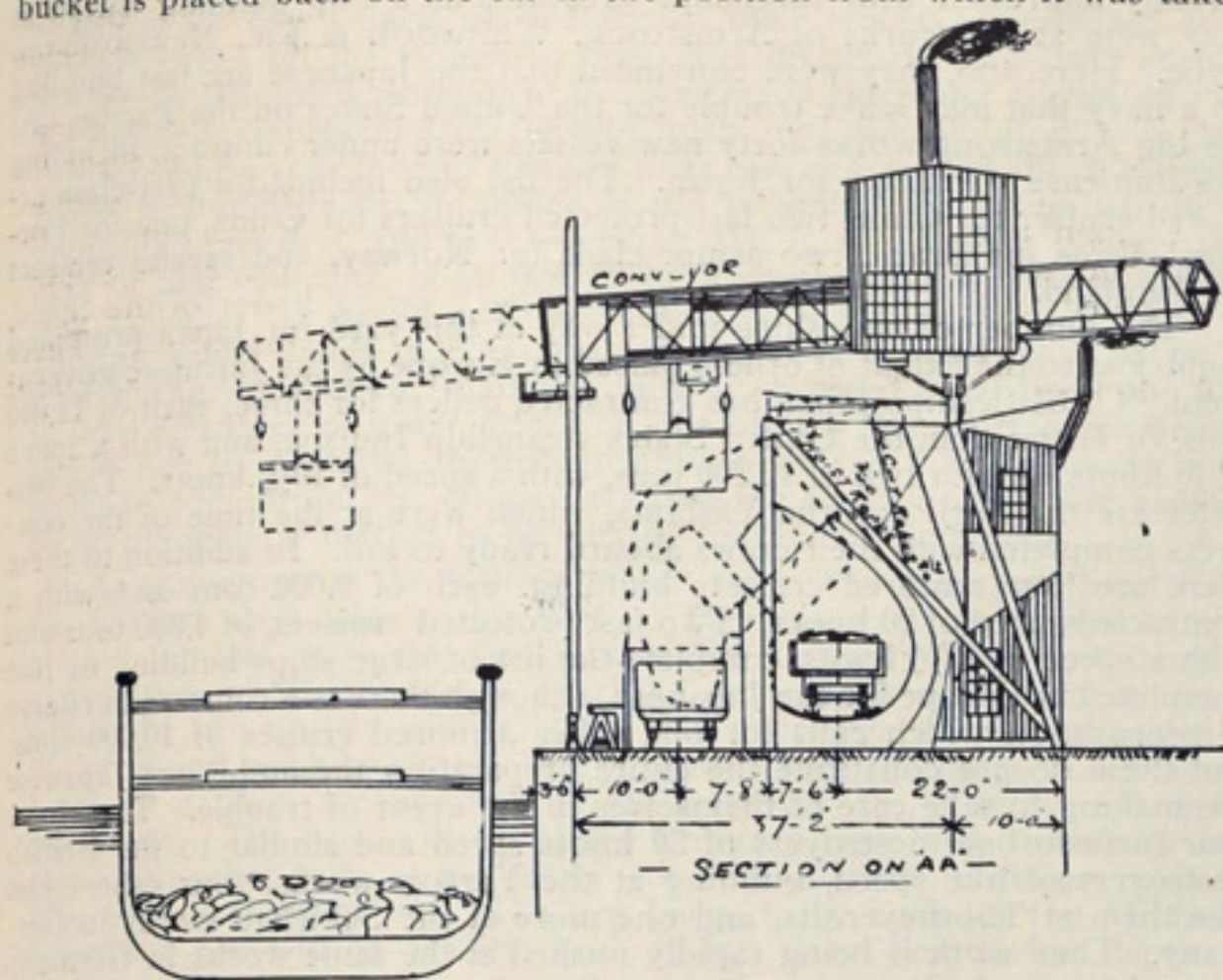
powerfully-built shear leg, upon which rests the superstructure, travels on a single track laid on the front of the dock. Each crane is fitted with a long arm or ram, which can be run out to any desired distance over the boat. From the ram is suspended a patent bottom-block, fitted with two hooks at each end for hooking onto the buckets. This work is done by



CAR IN DUMPING POSITION.

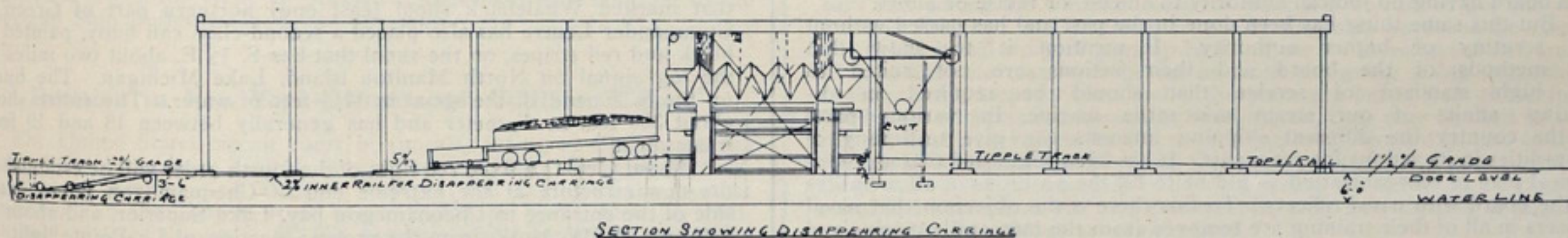
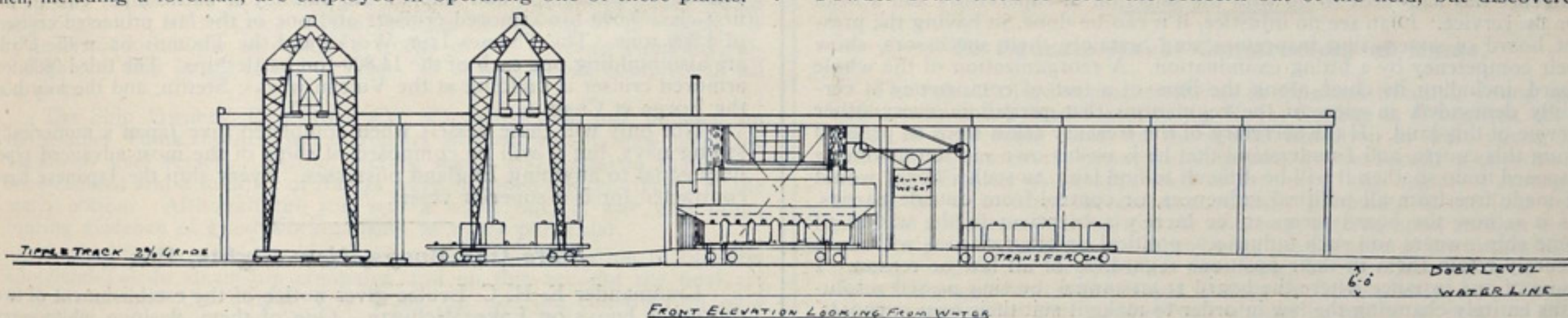
two men, who stand on platforms extending along each side of the bucket car track. By lifting on one set of hooks the bucket is raised and carried to any point desired, where by lifting on the second set of hooks the bottom of the bucket is opened and the shell is pulled away from the coal. The design is such that the bucket can be lowered to within a few inches

of the bottom of the ship or coal pile before opening its bottom, so that there is practically no fall or drop of the coal, and consequently the breakage is reduced to a minimum. As soon as the bucket is empty the operator lifts on the first set of hooks, which closes the bottom. Then the bucket is placed back on the car in the position from which it was taken,



and unhooked. Each crane has one operator and one engineer or fireman, but only two men are required for hooking on and unhooking the buckets for both cranes, which work over one bucket car at a time.

From the summary of hands required it will be seen that but ten men, including a foreman, are employed in operating one of these plants,



Plans of Brown Type of Car Dumping Machine.

except where it is impracticable to run the empty cars out of the tipples by gravity, in which case a special locomotive car is used, requiring the services of one additional man. It may be noted in connection with claim of 4,000 tons daily capacity in one of these plants that the tipples are capable of much greater capacity—6,000 to 9,000 tons in ten hours,—so that if at any time it is found necessary or advisable to increase the capacity of the plant, it can be done at a comparatively small expense by adding one or two more traveling cranes and additional buckets and bucket cars. This system of loading soft coal is the invention and design of Mr. Alex. E. Brown of the Brown Hoisting & Conveying Machine Co., Cleveland.

A Great Pump Concern.

A note in a catalogue just issued by Henry R. Worthington of New York conveys the important announcement that up to the present time 100,000 pumps have been built at the Worthington hydraulic works, which were established in 1845, and which are now capable of turning out annually about 14,500 pumps. These works have from the first been devoted solely to the manufacture of pumping machinery, and are the largest as well as the oldest works in the world exclusively engaged in this branch of engineering. The total contract capacity of Worthington pumping engines built for waterworks purposes during the last thirty-seven years exceeds four thousand millions of gallons per twenty-four hours. These pumps have been furnished for waterworks purposes everywhere in the world, the sales for 1897 including 120,000,000 gallons daily capacity for Chicago; those for 1896, 43,000,000 gallons daily capacity for Calcutta, India; those for 1895, 60,000,000 gallons daily capacity for Brooklyn, and those for 1894, 20,000,000 gallons daily capacity for St. Petersburg, Russia, and so on throughout the world.

The Review has excellent photographs of lake ships.

Lake Huron Logging Interests.

Since the adoption of the Dingley tariff, the Canadian newspapers, especially those of Ontario, are disturbed more than ever about the exports of logs from Georgian bay ports across Lake Huron to Michigan saw-mills. The following editorial from the Canadian Manufacturer is a sample of the kind of articles that are being printed on the subject:

"American lumbermen complain that if the Ontario government compels the manufacture in Canada of all logs cut in Ontario, they will be obliged to move their mills from the United States to Canada. It goes against the grain with them, even that they are now obliged to employ Canadian labor in their lumber camps. When they cannot take a log out of Canada they will be heart-broken at having to either buy lumber from our saw-millers, or else pay Canadian workmen for cutting logs into lumber on this side of the line. Wages for men in lumber camps have already gone up some \$6 a month since the labor provisions were enacted. In a country so circumstanced as Canada progress and protection are co-existent. When Sir Oliver Mowat left Toronto for Ottawa, the younger liberal school rejoiced in the removal of what they were pleased to call his 'conservatism' from the Ontario cabinet. If Hon. A. S. Hardy fails to insist upon the manufacture of Ontario saw logs in Canada, he will make a fatal mistake. The influence of his pseudo-Canadian friend, John Charlton, will not be much assistance at the polls in the north country, where nearly every man is interested directly or indirectly in the lumber trade. Why should Mr. Hardy display consideration for the business interests of the United States when that country's treatment of Canadian manufacturing interests, and (what is equally important) of Canada's laborers and mechanics, has consisted, and still consists of illiberal and picayune persecution, with the apparent intention of driving us into ultimate annexation to the powers at Washington. The American lumberman who has made his pile out of our natural resources should think himself lucky that he is not treated as the American Powder Trust tried to treat the Westphalian-Rhenish Explosive Co. of Spotswood, N. J., an institution that undertook to get a share of the American powder trade. This German powder company bought 600 acres of land and let contracts to the tune of \$20,000 for buildings. The American Powder Trust tried to force the concern out of the field, but discovered

that there was only one way to do it. The German firm was accordingly bought out, and the price paid was a royalty, and re-imbursement for expenses incurred. The American lumberman is not so enterprising as the Westphalian-Rhenish Explosive Co., which it now appears consisted of Herr Krupp, the great German cannon manufacturer. The American lumberman does the baby-act, instead of promptly proposing to get a share of Canadian home trade by way of revenge for being forced to manufacture here. The sufferer will not be the American lumberman, but his workman and the consumer. The consumer may possibly find some consolation in the fact that his position will be better off under a prohibition of the export of Canadian logs, than if the federal government had dealt with the question by way of an export duty. One of those peculiar master strokes of international finance, characteristic of the Dingley tariff, provides that in case an export duty is placed on sawlogs by any country exporting them to the United States, the amount of the export duty shall be added to the amount of the import duty in the United States. Canada's being the only available foreign lumber supply to the United States, this legislation is evidently directed at us. The result of the application of the regulation would be to stop the export of logs from Canada to the United States, if such were not the case. But as the American consumer must have Canadian logs or lumber, the present effect of its enforcement would be simply to raise the price to the American consumer."

Luce's "Seamanship" has been a text-book at the United States naval academy for the past thirty years. It is being used by naval reserve organizations all over the country. It is a standard work, selling at \$10, and will be mailed to any address at that figure by the Marine Review, 409 Perry-Payne building, Cleveland.

Home-seekers' excursions west, northwest and southwest are offered via the Nickel Plate road Sept. 21 and Oct. 5 and 19, at about one fare for the round trip. Inquire of agents. 316-Oct. 18

Opposed to the Steamboat Inspection Service.

Editor-Marine Review: I have read with considerable interest several articles published on the lakes of late regarding the inefficiency of the board of supervising inspectors of steam vessels and the answers to these articles made by James A. Dumont, the supervising inspector-general. There can be no question of the inefficiency and incompetency of a majority of the members of this board, as it is well known that few of them could pass the kind of examination that would be given to naval architects or marine engineers in any other similar service in this or other countries; and after all such should be the standard in selecting men to hold the important position of supervising inspector general, or to have a place on the board of supervising inspectors. By law they constitute a board organized to deal with matters of construction involving the highest attainments of naval architects and marine engineers, and what is more they make rules for the examination of captains, engineers and pilots, and pass upon the qualifications of these men, whose duties in many cases involve greater responsibility than the most prominent naval architects or marine engineers of our navy. In this connection it may be well to note the recent commendable action of the secretary of the treasury in the matter of selecting a supervising architect for the treasury department. All applicants were compelled in this case to pass a rigid examination before a civil service board, and it is to be hoped that the secretary will follow up this action by a determined effort to reorganize the board of supervising inspectors of steam vessels along the same line. He will certainly have the support of the shipping interests of the country in such an undertaking.

Everybody knows that in most cases the local inspectors are practical men, capable of filling their positions under the direction of an intelligent and competent supervising body, but they are now and have been for years harassed by the inability of the heads of the service to intelligently formulate and carry out a system of rules and regulations for the service. Everybody who has a knowledge of this service will bear me out in saying that few of the supervisors would make much of a showing against the average local inspector in a test pertaining to a practical knowledge of things most important to the service. And yet the local inspectors are required to pass a civil service examination, while in most cases in the past political influence has had most to do with the selection of supervisors and a head for the service. I can see no injustice, if it can be done, in having the present board of supervising inspectors, and certainly their successors, show their competency by a fitting examination. A reorganization of the whole board, including its chief, along the lines of a test of competency is certainly demanded, in view of the regulations that prevail in every other service of this kind. If the secretary of the treasury takes steps to proceed along this course, and I understand that he is on his own motion favorably disposed to do so, then it will be difficult to find fault, as such a board would be made free from all political influences, or control from outside parties. As it is now the board seems to be merely subservient to the wishes of some ship owners and such influences, political or otherwise, as will more securely retain them in their positions regardless of all law or reason. I know of one instance where the board at an annual meeting passed resolutions entirely changing the law in order to make it suit their own purposes. When the matter was presented to the secretary of the treasury for endorsement it was promptly returned with this note: "Illegal and presumptuous; an assumption of power; the laws of the statutes cannot be annulled by a board having no judicial authority to amend, or revise or annul."

But this same thing has been done in the past and has passed without the scrutiny of higher authority. I mention it to show that the methods of the board and their actions are not suited to the high standard of service that should be required in directing affairs of our steam mercantile marine. In various parts of the country the different shipping interests can give testimony of absurdities in its actions for years past. It has been suggested that an economical plan of reorganization would be to fill the positions of all members of the board with naval officers. To this there is the objection that naval officers in all of their training are removed from the mercantile marine and are not in touch with the commercial features and business characteristics of these interests. Then, too, a general change in laws would be required if an attempt were made to generally reorganize the service, while the adoption of a competitive examination rule would be of great advantage and could be accomplished readily and without great effort; it might be done through a determined stand on the part of the secretary of the treasury. I am honestly of the opinion that this competitive examination idea honestly and thoroughly carried into effect would give us an inspection service that would be a credit to the country and would do away with sailors and engineers of the political kind.

VERITAS.

New York, Sept. 30, 1897.

Some ready prepared paints sold to ship owners are dangerous from the use of benzine in mixing them. A man employed in painting the water-ballast tanks of the *Servia* lost his life through the ignition of the vapor given off, while an explosion resulting from a somewhat similar class of paint nearly occasioned the loss of the *Scotio*. In this instance a drum containing the paint became damaged during a gale, letting its contents escape, and on a seaman lowering a lantern into the hold, a violent explosion ensued, the bows of the ship being blown out on both sides. Analysis showed the paint to contain about one-quarter of its weight of benzine.—*The Engineer*, New York.

LOW RATE EXCURSION TO CHICAGO.

On Oct. 8 a special train excursion will be run to Chicago with return limit of tickets good for five days. Tickets will be sold at Cleveland and all stations west at rates lower than have been offered for several years.

Oct. 9 will be the 26th anniversary of the memorable Chicago fire, and the event will be celebrated on Oct. 9, 1897, as only Chicago can celebrate.

In addition to the special train, the cheap excursion tickets will be good within the five days on any one of that trio of express trains which are doing so much to increase the popularity of the favorite Nickel Plate road. Watch the papers for further information on this subject and confer with ticket agents.

Oct. 8.

Many Big War Ships.

Nowhere in their travels through England and Scotland were the American delegates to the International Congress of Naval Architects so forcibly impressed with England's greatness as a ship building nation as they were at the works of Armstrong, Whitworth & Co., Newcastle-on-Tyne. Here, too, they were convinced that the Japanese are fast building up a navy that may make trouble for the United States on the Pacific. At the big Armstrong works forty new vessels were under contract, including five immense war ships for Japan. The list also included a first-class armored cruiser for Chile, two fast protected cruisers for China, one for Portugal, three for Brazil, two armor-clads for Norway, and several cruisers for England.

The number of new ships under way at this yard for Japan prompted inquiry as to the extent of orders placed in Europe by the Japanese government. Of battleships Japan has contracted orders for three, each of 14,800 tons, or larger than the United States steamship *Indiana*, and with a speed of 18 knots, and for two of 12,200 tons, with a speed of 19¼ knots. The two latter are the *Ferji* and the *Yashima*, which were at the time of the congress completed with their crews aboard ready to sail. In addition to these there are four armored cruisers building, each of 9,600 tons and with a contracted speed of 20 knots. Two fast protected cruisers, of 4,300 tons and with a speed of 23½ knots, complete the list of large ships building or just completed in Europe for the Japanese, although there is a contract in course of preparation which calls for one other armored cruiser of 10,000 tons. But these do not constitute the entire preparation the ambitious Japanese are making to take care of themselves in the event of trouble. They have four torpedo boat destroyers of 30 knots speed and similar to the British destroyers of like speed, building at the Yarrow works, four others just like them at Thornycrofts, and one more at the Schichau works in Germany. Then work is being rapidly pushed at the same works in Germany on eight torpedo boats for them, and on four more of the same type of vessel at the Normand works. Add to this list the two cruisers now building in this country, and it will be readily seen that Japan is putting herself in position to be a formidable power on the seas.

The five Japanese ships at the Armstrong works included one of the 14,800-ton battleships and one of the 12,200-ton battleships; two of the first-class 9,600-ton armored cruisers and one of the fast protected cruisers of 4,300 tons. The Themes Iron Works and the Thompsons of the Clyde are also building one each of the 14,800-ton battleships. The third 9600-ton armored cruiser is building at the Vulcan works, Stettin, and the fourth at the Forge et Chantia.

Not only will these vessels when completed give Japan a numerically strong navy, but it will be composed of ships of the most advanced type, fully equal to anything England possesses. Every ship the Japanese have contracted for is a superior vessel.

More Gas Buoys, New Lights, Etc.

Commander E. H. C. Leutze gives notice of the establishment of two more gas buoys on Lake Michigan. One of them, flashing white every ten seconds, replaces the second-class red nun buoy which marked Wiggins point shoal, northern end of Lake Michigan. The second gas buoy, which also flashes white every ten seconds, replaces the red spar buoy that marked Whaleback shoal (east end) northern part of Green bay. Commander Leutze has also placed a second-class can buoy, painted with black and red stripes, on the shoal that lies S. ½ E. about two miles from the fog signal on North Manitou island, Lake Michigan. The buoy is on the S. E. end of the shoal in 17½ feet of water. The entire shoal is about 300 feet in diameter and has generally between 18 and 19 feet of water on it.

About Oct. 11 a fixed red light of the fourth order will be established in the new structure at the extreme end of Chequamegon point, easterly side of the entrance to Chequamegon bay, Lake Superior, and about one-half mile WSW. ¾ W. from the present location of La Pointe light. On the same date the fourth-order fixed red light, now shown from the tower on the keeper's dwelling at La Pointe station, will be discontinued, and a fixed white light of the fourth order will be established in the structure recently erected near the fog signal house about 3,600 feet E. by S. from the present light.

American Manufacture of Aluminum.

A great deal has appeared in the newspapers at different times about aluminum, its properties and its uses. It was recently announced that contracts had been signed for the delivery in England of 1,000 tons of the crude metal of American manufacture. General interest in the subject had led the Review of Reviews to publish an account of the discovery of the American process for the reduction of aluminum by electrolysis. The story of this discovery (which resulted in bringing down the price of the metal from \$16 to 35 cents a pound) and its subsequent application in manufacturing on a commercial scale is one of the most interesting chapters in the recent annals of American industrial progress. America now makes as much aluminum in a year as all the countries of Europe together. Previous to the opening of the original works near Pittsburgh, practically no pure metal was made in the United States. The market price of what was imported had not been lower than \$5 a pound in New York. The American manufacturers were soon able to place the pure metal on the market at 50 cents a pound, and an important reduction from this price has lately been made. Besides the works near Pittsburgh, which have been operated continuously since November, 1888, two plants at Niagara Falls are now operated by the same company, and the total productive capacity of the three plants is more than 10,000 pounds of aluminum a day.

The Marine Review has prepared in neat oak frames cards containing the schedule of time required to be run between certain points in the St. Mary's river under the speed limit of seven miles an hour. When hung in a pilot house, distance and time may be readily noted from these cards, as the type is large. They will be sent by express to any address at \$1 each, or may be had upon application at 409 Perry-Payne building, Cleveland, for 65 cents each.

Ship Building Matters.

Everybody in the vessel business is guessing as to the plans of John D. Rockefeller's representatives on the lakes regarding new ships. The report that the Carnegie company or the Carnegie-Oliver interests are to let contracts for new vessels on account of their recent acquirement of big ore properties on the Gogebic range, was dismissed with little thought, as there is absolutely nothing in it. Neither is there any reason why Mr. Rockefeller's representatives should rush into the building of a large number of new vessels on account of their connection with this transaction. It will undoubtedly be the policy of the Bessemer Steamship Co. to add gradually to its fleet, and at this writing Mr. L. M. Bowers, general manager of that company, is known to be figuring with several of the lake ship builders. It would not be surprising, however, to find that this figuring would result in contracts for only one or two ships to be out next spring, or that the matter would be deferred until later on, so as to take advantage of lower prices on one or two ships which the builders would not be required to deliver until next fall. A statement which seems to come from Mr. Oliver says that the Carnegie Gogebic ores will be on the general market to be carried by the lowest bidder.

As announced in the Review of last week, the American Steel Barge Co. has two steel ships to build at its West Superior yard, and in preparation for this work the directors of the company have authorized an expenditure of \$20,000 for an overhead crane system to cover a slip on which the two vessels will be built. No appropriation was provided for the proposed machine shop. The steamer which the barge company will build on its own account will be 412 feet over all, 50 feet beam and 27 feet depth. The bow will be of the ordinary type with turtleback forecastle, but other parts of the vessel will be whaleback in design, with turrets, whaleback stern, etc. The tow barge to be built for the Minnesota Steamship Co. will be 376 feet keel, 46 feet beam and 26 feet depth.

It's wonderful how quadruple expansion engines for freight steamers are taking hold. Everybody who is contracting or talking of a contract includes quadruple engines in the plans. Mr. A. B. Wolvin and the management of the Chicago Ship Building Co. may claim credit for this advance in engineering on lake freight steamers, the Chicago company especially on account of the meager machine shop facilities under which they began the construction of the first set of engines of this type. It is understood that the new engine works of the Chicago company, although not very large, is a fine shop. It is now about complete in all its parts.

The Ship Owners' Dry Dock Co., Cleveland, has just finished on the steamer Yuma the first job of repairs worked with its new plant for repairs to steel vessels. Bottom plating seams and butts on the Yuma were caulked and a number of frames were strapped and re-riveted in the water bottom. Although the job was a small one, it was well done, bearing evidence of good workmanship in every particular.

Some differences have come up regarding the formation of the new Cleveland-Toledo steamship company, and on this account the final arrangements with the Detroit Dry Dock Co. for the construction of a duplicate of the passenger steamer City of Buffalo are delayed, but the matter will be amicably settled within a few days.

Jones & Loughlins of Pittsburg are interested in the 400-foot steel steamer for which Mr. Wm. G. Mather of Cleveland let a contract to the Cleveland Ship Building Co. a few days ago.

Decision in New York-Conemaugh Collision Case.

The United States circuit court of appeals, sitting at Cincinnati, has reversed the decision of United States District Judge Swan of Detroit, who held the steamer New York to blame for the sinking of the steamer Conemaugh in the Detroit river below Sandwich point, Oct. 21, 1891. Damages involved amount to \$72,978, together with interest and costs. The collision occurred at 8 o'clock in the evening. The New York, of the Union Steamboat Co., was bound up, and the Conemaugh of the Anchor line was bound down. The latter had a full load of package freight; the former had part of a load of package freight. The Conemaugh, with the current, was going about 12 miles an hour; the New York, against it, was going about 10. The old steamer Burlington, bound down with a tow of barges, all lumber laden, was rounding toward Smith's coal dock, where she was bound for fuel. The two steamers attempted to pass each other astern of the last barge in the tow and the collision followed. The grounds on which the decision of Judge Swan was reversed will not be learned until the full decision is at hand. The decision not only assesses on the Conemaugh the full damage to herself and cargo, but the \$3,000 damage to the New York also, together with the six years' accumulated interest on the entire amount, and the costs, as well. The value of the Conemaugh is now considerably less than the total involved in the suit.

Around the Lakes.

Shipments of iron ore from Ashland to Oct. 1 aggregated 1,572,684 gross tons, of which 718,709 tons was moved from the Wisconsin Central docks and 853,975 tons from the Northwestern docks.

Menominee, Mich., now has a very good harbor. The channel is 7,500 feet long from the end of the government piers to the North Ludington mill, 200 feet wide and 18 feet deep. At the upper end is a turning basin 600 feet long and 250 feet wide.

Lee & Tilden, admiralty lawyers of Cleveland, have dissolved partnership. Mr. Tilden goes to a new firm, to be known as Solders, Hogshett & Tilden. Mr. Roger M. Lee retains, on his own account, the offices of the old firm in the Perry-Payne building.

Receipts of coal of all kinds, net tons, at Milwaukee during several years past, according to reports of the chamber of commerce of that city, have been as follows: 1890, 996,658 tons; 1891, 1,156,033; 1892, 1,374,414; 1893, 1,249,732; 1894, 1,337,046; 1895, 1,446,423; 1896, 1,587,795. Of late years the receipts have been about equally divided as to hard and soft coal.

Southwark and Kensington.

Editor Marine Review:—On page 12 of your issue of Sept. 16 you speak of Archibald Denny presenting figures indicating the great amount of detailed calculation and design involved in the construction of the Southwark. Now, if you refer to the Southwark which the Denneys constructed in 1893 for the International Navigation Co., I beg to say that the dimensions given are all wrong. Being attached to the Southwark in the interest of the International Navigation Co. from the time the first part of her machinery and boilers was put in until she had made her trial trips on the Clyde, when I was transferred to the Kensington, built for the same company by J. & G. Thomson, and being in a position to know all the particulars and dimensions of these two ships, I will give their principal dimensions, which for the Southwark are: Length between perpendiculars on 26 feet water line, 480 feet, breadth, 57 feet; depth, moulded, 40 feet; dead weight carrying capacity, 10,505 tons; gross tonnage, 8,606; net register, 5,641; total cargo capacity to bottom of beams, 512,360 cubic feet; to top of beams, 54,194 cubic feet. The Southwark is propelled by twin screws, driven by two sets of quadruple expansion engines having cylinders 25½, 37½, 52½ and 74 inches diameter by 4 feet 6 inches stroke, which developed 7,780 I. H. P., making 87.5 revolutions per minute on the trial trips, the ship averaging 16.34 knots per hour during the four hours' run down and up the Clyde. Her mean draft was 22 feet, with about 5,000 tons of coal and iron in her. The Kensington is the same in length, breadth and depth and has engines and boilers of the same size. Her gross tonnage is 8,668.73; registered tonnage, 5,645.30; displacement at 22 feet mean draft, 12,469 gross tons; at 24 feet mean draft, 13,759; at 26 feet mean draft, 15,055, and at 28 feet mean draft, 16,355 gross tons; cubic feet of cargo space, 517,860 to bottom of beams, and 544,270 to top of beams; water ballast in eight tanks, 1,456 gross tons. During her measured-mile trial down and up the Clyde, May 30, 1894, she averaged 15.874 knots per hour on 22 feet mean draft, the engines developing 8,313 I. H. P., making 86.7 revolutions per minute.

New York, Oct. 5, 1897.

H. J. TEIPER.

[The vessel referred to in Mr. Denny's calculations is not the Southwark built for the International Navigation Co.—Editor].

To Educate Naval Constructors at Home.

The refusal of government officials in England to admit young naval cadets from the United States to the Royal College at Greenwich has resulted in steps being taken for the special education of these young men at home. A new course in naval architecture, for the benefit of constructors who are hereafter to be appointed in the navy, was begun at Annapolis on the 4th inst., when three cadets, recently graduated in the four years' practical and theoretical work at the academy, entered upon another course which will cover three years. It had been the purpose of the authorities to limit the course to two years, the time taken by American cadets to cover the work prescribed at the Royal College at Greenwich and at Glasgow, but it was decided that another year should be added in order to afford ample time to the class for studying the navy yards of the country and the character of designing conducted by them.

Constructor Hobson, who will be in charge of the course at Annapolis, says that during the winter theoretical work will be carried on, and in the summer the class will be taken to the leading ship yards of the country, where the actual work of warship building can be investigated and studied. This winter the class will be set at work designing a big battleship, a cruiser, and a torpedo boat, and if the plans are better than those turned out by the construction bureau in Washington, they may be used in building the next new vessels for the navy. The establishment of this course at the naval college is due to Chief Constructor Hichborn, who urged that there was no longer necessity of sending cadets abroad to take a course in naval architecture, as our own constructors were now capable of imparting as complete knowledge as was required.

Cargo Records of Lake Ships.

James Corrigan's steel tow barge Amazon loaded 5,631 gross tons of ore at Duluth, Monday, for South Chicago. This is equal to 6,307 net tons, or eleven tons more ore than had previously been moved in a single cargo on the lakes. The Wolvin steamer Empire City is thus deprived of the ore-cargo record by the small margin of eleven net tons. Record cargoes of ore, grain and coal follow:

Iron ore—Schooner Amazon, owned by James Corrigan of Cleveland, 5,631 tons gross, or 6,307 net, Duluth to South Chicago, draft of 17 feet 1 inch; steamer Empire City, A. B. Wolvin of Duluth, 5,622 tons gross, or 6,296 net, Two Harbors to Cleveland, draft of 17 feet 2 inches; schooner Polynesia, James Corrigan of Cleveland, 5,477 tons gross, 6,134 net, Duluth to Fairport, draft of 16 feet 8 inches; Andrew Carnegie, Wilson Transit Co. of Cleveland, 5,425 tons gross, 6,076 net, Two Harbors to Cleveland, draft of 17 feet 4 inches.

Grain—Steamer Crescent City, A. B. Wolvin of Duluth, 225,000 bushels of corn, equal to 6,300 net tons, South Chicago to Buffalo, draft of 17 feet; steamer Empire City, A. B. Wolvin of Duluth, 205,445 bushels of wheat, equal to 6,163 net tons, Duluth to Buffalo; schooner Amazon, James Corrigan of Cleveland, 217,000 bushels of corn, equal to 6,076 net tons, Chicago to Buffalo, 16 feet 6 inches draft; steamer Crescent City, A. B. Wolvin of Duluth, 318,000 bushels of oats, equal to 5,088 net tons, Duluth to Buffalo.

Commander Folger, U. S. N., light-house inspector of the district that includes Lake Superior, Sault river, Lake Huron and other places on down to the headquarters of the district in Detroit, has been making a number of changes among keepers of lights and other employees, and it naturally follows that some of the politicians are after him. It is quite certain, however, that Commander Folger did not find this district in the best of shape when he took hold of it, and his efforts to improve the service will undoubtedly be approved by superior officers at Washington.



DEVOTED TO LAKE MARINE AND KINDRED INTERESTS.

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The books of the United States treasury department on June 30, 1896, contained the names of 3,333 vessels, of 1,324,067.58 gross tons register in the lake trade. The number of steam vessels of 1,000 gross tons, and over that amount, on the lakes on June 30, 1896, was 383 and their aggregate gross tonnage 711,034.28; the number of vessels of this class owned in all other parts of the country on the same date was 315 and their tonnage 685,204.55, so that more than half of the best steamships in all the United States are owned on the lakes. The classification of the entire lake fleet on June 30, 1896, was as follows:

	Number.	Gross Tonnage.
Steam vessels.....	1,792	924,630.51
Sailing vessels and barges.....	1,125	354,327.60
Canal boats.....	416	45,109.47
Total.....	3,333	1,324,067.58

The gross registered tonnage of the vessels built on the lakes during the past six years, according to the reports of the United States commissioner of navigation, is as follows:

Year ending June 30.	1891	1892	1893	1894	1895	1896
Number.....	204	169	175	106	93	117
Tonnage.....	111,856.45	45,968.98	99,271.24	41,984.61	36,352.70	108,782.38
Total.....	864	444,216.36				

ST. MARY'S FALLS AND SUEZ CANAL TRAFFIC. (From Official Reports of Canal Officers.)

	St. Mary's Falls Canals.			Suez Canal.		
	1896*	1895*	1894	1896	1895	1894
Number of vessel passages.....	18,615	17,956	14,491	3,409	3,434	3,352
Tonnage, net registered.....	17,249,418	16,806,781	13,110,366	8,560,284	8,448,383	8,039,175
Days of navigation.....	232	231	234	365	365	365

*1895 and 1896 figures include traffic of Canadian canal at Sault Ste. Marie.

Referring to the scheme recently suggested by Mr. Hollis for settling the line and staff question in the United States navy, the Army & Navy Gazette (English) says: "It will be seen that the main feature of this scheme is the introduction of a system similar to that which obtains in the British navy in regard to the gunnery, torpedo and navigating branches. The proficiency in carrying out the duties of an officer of the watch is only to be obtained by experience and plenty of practice. The responsibilities of a man charged with the direction of a ship's movements is very great even in times of peace; in times of war it goes without saying that the duties will be more onerous and the responsibility far greater. In a similar manner, mutatis mutandis, the duties and responsibilities of the officer in charge of the engine room are not such that they can be entrusted to the novice, or to one without experience and practice. The specialist in gunnery, torpedo, or navigation is on a wholly different footing. He is not without experience as a watch officer, and, looking forward ultimately to promotion to a grade in which his special knowledge will be subordinated to that of the direction of the ship in peace or war, he will probably not allow his special functions to interfere in such a manner as to impair his qualifications for the higher post."

George G. Tunell of Chicago, who was recently appointed by the secretary of the treasury to undertake the collection of statistics pertaining to lake commerce, has visited several of the principal lake ports during the past two or three weeks, with a view to outlining plans for his report. It is unfortunate that there is only a small sum of money available for this service, and on this account Mr. Tunell's report will be limited and his services in the treasury department will be confined to a couple of months. He will collect and compile such data as can be secured under existing disadvantages in the customs regulations, just as was done by Mr. C. H. Keep of Buffalo a few years ago when a small part of a general appropriation was expended by the treasury department in the same way. It is expected, however, that as a result of Mr. Tunell's efforts, the treasury officials will be made fully acquainted with the disadvantages that are now encountered by everybody who attempts to collect statistics of lake commerce, and will not only urge upon congress the necessity of providing regulations for this purpose, but will also try to bring about the establishment of a permanent bureau in the treasury department for the collection of statistics relating to internal water commerce generally.

In support of its report to the secretary of the navy in favor of the construction of several new dry docks, the dry dock board says: "We are, from a naval point of view, weak in comparison with the great naval powers of Europe, and the naval strength of Japan is growing so rapidly that within a year or two she will also overmatch us in available strength in the Pacific. Every effort is then necessary on our part to at least retain command of the sea on our own coasts and to supplement our naval strength by providing accessible places for repair and docking and by fortifications so located that when our squadrons are pressed by a superior force they may use them as supports in holding the approaches to our coasts. So long as an enemy is compelled to draw all of his supplies from his home stations, his operations must be limited by the necessity of holding his communications clear and the quantity of supplies he can transport in his ships under the protection of his fleets. If he must be prepared to meet upon arrival on our coasts

even a much weaker naval force, held compactly in hand, with repair and supply facilities near, we can retain the command of the sea on our coasts and render impossible its occupation near our commercial centers."

The heaviest open-hearth gun ingot ever cast was recently turned out at the works of the Bethlehem Iron Co. Metal from three furnaces was required to fill the mould. The ingot weighed 223,000 pounds, or nearly 100 gross tons. It was octagonal in shape. Its length was 16 feet 10 inches and its diameter 74 inches. The ingot will be forged into a tube for a 16-inch experimental nickel steel gun which the Bethlehem company is to make for the United States army. The forged tube will be 35 calibers, or 46.6 feet, in length. The jacket for the gun will require an octagonal ingot of even greater weight, namely, 243,000 pounds, or 108 gross tons. Even these large masses of steel have been exceeded in the rectangular ingots cast at the Bethlehem works for armor plate, the 17-inch port plates for the two turrets for the 12-inch guns of the United States battleship Iowa having required nickel steel ingots weighing 273,500 pounds, or 122 gross tons.

Names selected for the three 30-knot torpedo boats, authorized by the last naval appropriation bill, have been given out by Secretary Long. The vessel to be built by the Harlan & Hollingsworth Co., of Wilmington, Del., No. 19, will be named Stringham, after Capt. S. H. Stringham, who commanded the United States fleet at the capture of Forts Hatteras and Clark. Goldsborough is the name selected for No. 20, being built by Wolff & Zwickler, of Portland, Ore., in honor of Rear Admiral L. M. Goldsborough, who commanded the North Atlantic squadron at the capture of Roanoke island and Elizabeth City. The boat known as No. 21, under construction by the Gas Engine & Power Co. of Morris Heights, New York, will be called the Bailey. This name was selected because of gallantry displayed by Capt. Theodoros Bailey during the attack of the union forces on Forts Jackson and St. Phillips.

Mr. E. T. Chamberlain, commissioner of navigation, is again engaged in completing the statistical part of his annual report, and he finds that during the year ending June 30, 1897, the ship yards of the lakes turned out more vessels than the ship yards of all other parts of the country, having constructed 120 vessels of 116,937 tons, compared with seventy-one vessels of only 115,296 tons built in the remainder of the United States. "We are almost exclusively indebted," Mr. Chamberlain says, "to the growth of ship building on the great lakes for our increase in tonnage during the past ten years. The discovery and utilization of the great mineral wealth of the lake region have brought about a maritime growth in that portion of our country which is without parallel in maritime history. Our lake fleet alone is greater than that of any foreign nation except Great Britain or Germany."

The business men of this country who have given attention to the shipping question of late agree in saying that one reason for Great Britain's command of the trade is the aggressive methods of her representatives in all parts of the world. Upon returning from Europe recently, Mr. Charles H. Cramp said that a British official in foreign lands does not hesitate to do all in his power to send trade home to his countrymen. He is expected to do so, and the more successful he is in securing contracts, the better he is liked. What more convincing argument is needed for improvement in our consular service and the removal of politics as far as possible from that service? The merchants and manufacturers of the country are pleading for a reorganization of the consular service, and the present administration will profit by undertaking a vigorous policy in this regard.

A plea for improvements in navy yard plants will undoubtedly be a feature of the report of Secretary Long which is now in preparation. The secretary will point out especially the necessity of additional docks but will also recommend the construction of more vessels. An increase of both officers and men in the navy will also be urged upon congress. "The secretary's views on the personnel question," says the Army & Navy Journal, "cannot be foreshadowed, but it is known that Assistant Secretary Roosevelt has submitted a long statement in regard to the Hollis proposition, etc., which the secretary will consider in connection with the recommendations he will make on this point."

A proposition to establish a school of naval architecture and marine engineering at the Chicago University has been under consideration of late. It is to be hoped that the heads of the big Chicago institution of learning can be induced to give serious thought to this proposition, as a decision in favor of such an undertaking would undoubtedly result in the establishment of the greatest school of its kind in the world. The best of everything is the policy of this great college.

Steamboat inspectors on the lakes have of late revoked the licenses of several vessel captains who were involved in collisions, and their action has prompted a discussion of the probable effect of such suspensions on law suits. The rulings of steamboat inspectors in matters of this kind should have no bearing in actions at law as testimony pertaining to their dealings with parties involved in accidents is not admitted.

In a communication from Marquette to Geo. L. McCurdy of Chicago, Capt. Dowdell of the steamer R. R. Rhodes says that his steamer while bound up, drawing 14 feet 9 inches, through Portage river, struck something twice about the intersection of ranges 13-8 and 14-15 abreast of where the dredge was working on Sept. 29.

Water tube boilers in a new torpedo boat built in England are of 2,000 horse power and weigh, with all fittings complete, only 18 tons, or about 20 pounds per horse power.

Earnings of the Babcock & Wilcox company in England during the year ending June 30, 1897, aggregated \$411,890.

Power of Labor Unions in British Ship Yards.

Upon returning from the International Congress of Naval Architects and Marine Engineers in London, a short time ago, Mr. W. I. Babcock of the Chicago Ship Building Co. wrote an article for the Review dealing with conclusions regarding the ship building industry in England and America. The article has been very widely copied. Mr. Babcock, as well as other delegates to the congress from the United States, was impressed with the power of labor unions in English and Scotch ship yards. A few instances of abuse of this power cited by Mr. Babcock have caused surprise in this country, but there was no exaggeration of the unreasonable trades union rules that have actually been enforced on the Clyde and in other ship building districts.

An editorial in one of the trade magazines discussing the present strike of the engineering trades in Great Britain on the question of an eight-hour day, refers to another of these rules which provided that each machine tool should be "attended" by only one man, instead of letting this one operative give his care to, say, half-a-dozen tools, like, for instance, a planing machine or lathe which frequently, for quite long periods of time, require very little attention while at work. "This one-man-to-a-machine policy," says the writer of the article referred to, "would not be tolerated for a day in the United States or Germany. The machinist's time is too valuable to be dawdled away in sitting on a bench mayhap, waiting for a big surface to be planed off or turned down; the principle of maximum output with minimum labor demands that the time be more profitably employed, and this it can be without imposing hardship on the men. A number of machine tools can often be tended with little more trouble than a single one, and carrying this into practice has helped largely to make American shops so remarkable in productive capacity without sacrifice of quality. If the present labor dispute in Great Britain should bring about the abolishment of some of these foolish regulations, an important point would be gained for all—not simply for the employers. Rules like this one paralyze trade, eventually drive it away to other countries, and the ill effects fall upon employer and employed alike. For some years past Continental, and principally German, competition has been a serious menace to British industries, and a successful issue for the men in the present agitation would, in the end, probably be a rather doubtful victory for them. Trade depression means lack of orders, closed shops and idle days for the men, and the loss of wages for these days might more than wipe out the increase now under contention."

Chicago River Tug Man's Home.

(FROM CHICAGO RECORD.)

Yes, sir, home is where the heart is; which is words that I have read
In a book wrote by a party that I understand is dead.
"Home, Sweet Home's" a tune I whistle often of these summer nights,
When the smell rolls up the river follerin' the steamer lights.

In the heart of ev'ry human is a feelin', kinder soft,
Fer the bidin' place he's uset to, even if it's just a loft,
An' a-settin' on the towpost when we're docked here, all alone,
I feel sorry for the man that has no place to call his own.

With my pipe lit an' a-puffin', with the bridge lamps shinin' red,
An' the black smoke hangin' heavy in the air just overhead,
An' the garbage in the river bobbin' up an' down, you see,
There's a heap o' satisfaction to a homebody like me.

Other men may have their millions an' their houses, big an' grand,
But I ain't got any envy for them people of the land;
Twenty years I've bunked down forrard in the old Rebecca Nye—
She has been my home an' will be, if I'm lucky, till I die.

Home—yes, home is where the heart is, an' the old Rebecca's mine;
I blowed up with her in '80, sunk with her in '89;
Ev'ry plank an' rope an' rivet, ev'ry bolthead is a friend
True an' firm an' tried an' trusted, on the which I can depend.

This is home—the greasy water an' the sulphur an' the smoke,
An' the smell that comes a-floatin' up the river till you choke,
An' the tootin' o' the whistle, an' the crashin', splashing sound
As the whizzin' old propeller swings some passin' boat around.

This is home—the steward callin' like a voice out of the tomb,
Tellin' us to come to supper down there aft the engine room.
This is home—with us a-groanin' up the river, pullin' slow,
An' as we go chasin' outside nosin' 'round to find a tow.

Let them kings who live in castles be as proudish as they please;
Let them wade around in carpets that reach clear up to their knees,
That an' such like things may be their idy of a home, but I
Druther have my bunk down forrard in the old Rebecca Nye.

Not the Dean Richmond.

In answer to an inquiry regarding the report that officers of the U. S. S. Michigan had found the wreck of the steamer Dean Richmond, the Review has received the following note from the Michigan, signed by Ensign H. H. Caldwell, navigator: "The report that the Michigan has found the wreck of the Dean Richmond, off Dunkirk, is untrue. We found and located a spar which has been reported to be in that vicinity for several years. It is the lowermast of a sailing vessel, projects 5 feet above water, and is anchored, evidently by heavy rigging and wreckage. It lies 10 1-3 miles N. 5° E. (true) from Dunkirk light-house in 81 feet of water."

Army and navy charts of the lakes are kept in stock by the Marine Review, Perry-Payne building, Cleveland.

Take the Nickel Plate \$6.00 excursion to Chicago Oct. 8. Choice of regular or special trains.

Permanent Recruiting Station for the Lakes.

It would seem that the success which the navy department met with recently in enlisting men from the lakes for the navy will result in the establishment of a permanent recruiting station at Chicago. A copy of the report of Lieut. Comdr. J. M. Hawley, who was in charge of the recruiting expedition, is at hand. It is altogether a strong argument in favor of a permanent station at Chicago, and is highly complimentary to the class of men employed on lake vessels. All of the men enlisted on the lakes—about 250—were American citizens and a large percentage were American born.

"Of course I endeavored, upon going to the lakes," Lieut. Hawley says, "to impress upon the minds of the public the fact that the navy was not in need of men, as the complement allowed by law was nearly full, but that the secretary of the navy desired to give western men a chance to enlist in the navy upon an equal footing with men in the eastern coast cities and not oblige them to make a long journey to an eastern recruiting station at their own expense, and then with the possibility of being found physically disqualified for enlistment. At all of the cities visited a very great interest was shown in the object of my mission to the west, and a general desire expressed to have a permanent recruiting station established at one of the large lake cities, to be open several months during the year, and temporary stations established at the other lake cities.

"In conversation with men interested in lake commerce, I learned that the best time to secure good lake seamen is during the winter months, when lake navigation is closed. I believe that a very decided interest in the navy will be developed among the people of the great west by the enlistment of men and boys from that part of the country for general service in the navy, and I would respectfully suggest that a permanent recruiting station be established in Chicago, and that the officer in charge of it be given authority to visit adjacent cities for the purpose of establishing temporary rendezvous; during such visits the rendezvous in Chicago to be closed. I am of the opinion that some of the large cities in the south and south-west should be accorded the privilege of a temporary rendezvous, and would suggest such places as Galveston, New Orleans, Mobile, Pensacola, Savannah and Charleston.

"The enlistments on the lakes were all unusually fine specimens of men and boys; not one presented himself under the influence of liquor, and there were no rejections for diseases which are commonly found among men who apply for enlistment at the Atlantic and Pacific coast rendezvous. They seemed to me men of excellent habits, and in the long railroad trips from the lake ports to New York, not one of them gave the officers the slightest trouble."

Canada's Tariff on Ships and Ship Materials.

Washington, D. C., Oct. 6.—For the convenience of the different commercial and manufacturing interests, the new Canadian tariff has been dissected so as to bring together items that are of special interest in several important lines. Portions of the new law that bear particularly on the shipping interests are as follows: Sails for boats and ships, 25 per cent. ad valorem; ships and other vessels built in foreign countries, whether steam or sailing vessels, on application for Canadian register, will pay on the hull, rigging and all appurtenances, except machinery, 10 per cent. ad valorem; on boilers, steam engines and other machinery, 25 per cent. ad valorem; canvas and sail, twine of hemp and flax, when to be used for boats' and ships' sails, 5 per cent. ad valorem; twine and cordage of all kinds, n. e. s., 25 per cent. ad valorem; all goods not enumerated as subject to any other rate of duty, nor declared free of duty by this act, or not being goods the importation whereof is by this or any other act prohibited, shall be subject to a duty of 20 per cent. ad valorem. Following are items on the free list: Books on ship building; chronometers and compasses for ships; wire rigging for ships and vessels; life boats and life-saving apparatus specially imported by societies established to encourage the saving of human life; anchors for vessels; all articles for the use of the governor-general; logs and round unmanufactured timber, ship timber or ship planking, not especially enumerated in this act.

Engine Building Contracts.

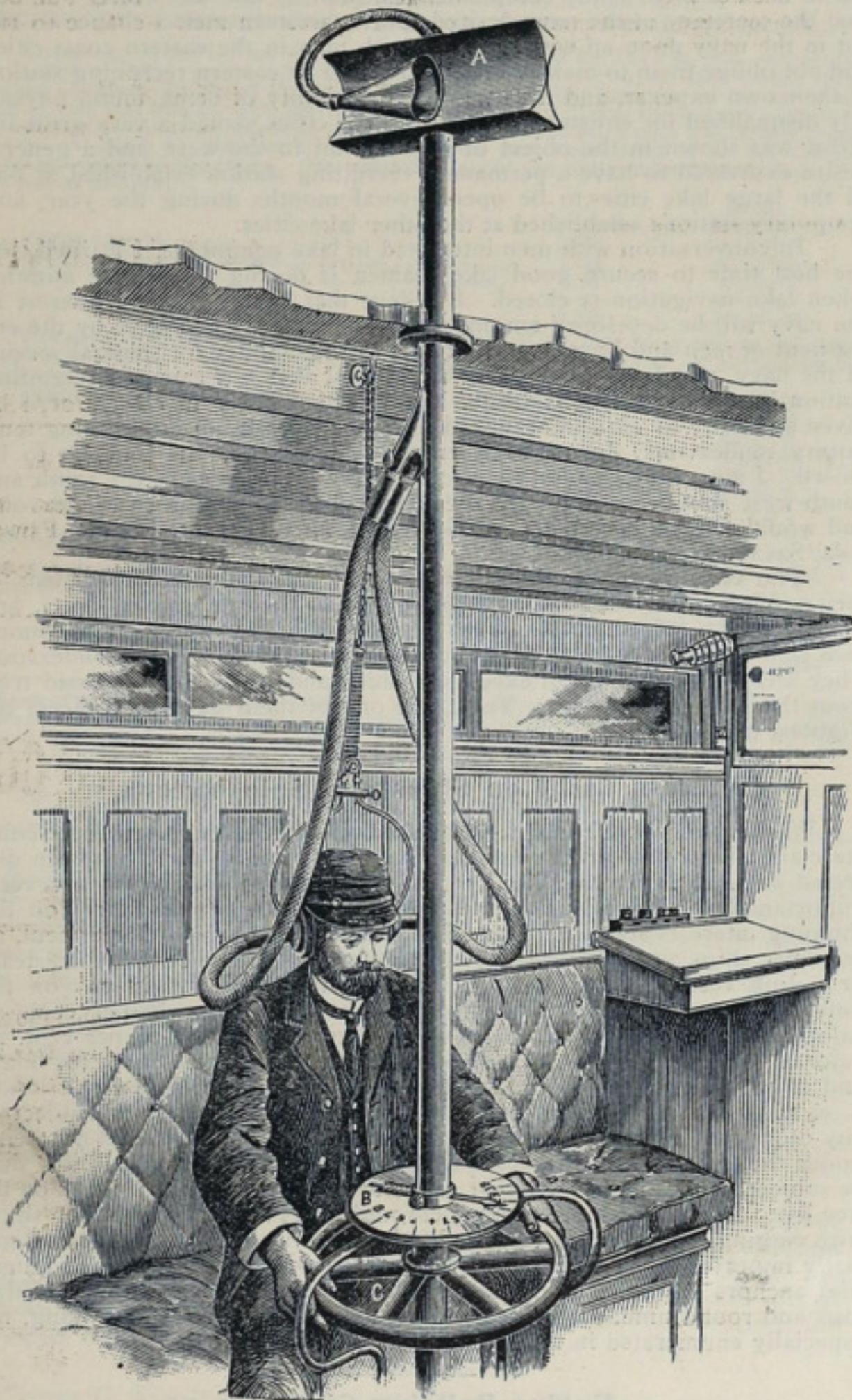
Some owners of lake vessels are preparing their steamers, by adopting every means of economy, to make money even with the reduced freights that have come into the business. The announcement that the steamer Bulgaria will have her engines rebuilt and a Howden equipment added to her boilers by the Dry Dock Engine Works, Detroit, Mich., shows that another shrewd and wide-awake vessel owner has been convinced of the economy of this system of draft. The Howden hot draft is now in operation on thirty-five lake steamers, and the Bulgaria will make the thirty-sixth equipment. The adoption of this draft on so many lake steamers is attracting attention among owners, and the number of equipments this winter may reach a half hundred. The general adoption of this draft on the lakes, its advocates claim, is only a matter of time required to make its advantages known to all vessel owners.

The Dry Dock Engine Works has also closed a contract with the Goodrich Transportation Co., Chicago, for a compound engine with cylinders 21 and 44 by 36 inches, having steam reversing gear, etc., for the steamer City of Ludington.

Men employed on the new royal yacht building in England have been cautioned not to divulge any information concerning her, and to avoid the possibility of other persons employed in the loft obtaining particulars of the new ship the four are closeted together in a room, the door of which is kept regularly locked. Why such an extreme precaution should be taken concerning a matter which will undoubtedly become public later on, it is difficult to conjecture. When the ship is being built sketches of all parts of her will be accessible, and the outside public will glean such information as they desire to know. It is unlikely that the structure of the hull will embody any principle which it is desirable to keep secret, and the engines will in all probability be built by contract on much the same lines as other modern triple or quadruple expansion engines. In neither case, therefore, is there any reason for the precaution now being taken.—The Engineer, London.

The Eophone.

Several illustrations of the eophone, an ingenious device for locating sound, have been printed in this country, but none of them seemed to show its several parts quite as clear as the engraving appearing herewith. It was reproduced from Engineering of London. Since this device has been adopted for several vessels of the United States revenue cutter service, and since a board of navy officers has made a favorable report regarding it, the manufacturers in this country are meeting with marked success in introducing it in navies and among merchant shipping firms throughout the world. A report from naval officers who tested this device aboard the U. S. S. Indiana asserts that with signals coming at constant intervals the sound



can be located with an error of certainty not more than one-eighth of a point. Many of the trials were made in thick and foggy weather, which, however, seemed to have no effect on the accuracy of the indications. The committee, however, point to the necessity of giving the receiving vane a clear sweep of the horizon, as when sheltered from the source of sound by deck-houses or similar structures the accuracy of the readings was much reduced.

The eophone consists essentially of a vane A, which is mounted on a vertical rod and is exposed to the open air in as unsheltered a position as possible. On either side of this vane is a sound receiver, from which a tube leads to one of the ears of an observer located in a room below. Each convex surface of the vane A acts as a reflector to its own receiver and as a screen to the other one. The rod carrying this vane can be rotated by means of the handwheel shown, and in use the observer turns the vane round till the sound investigated is heard in one ear only. The motion is then reversed till the sound is heard in the other ear only, when the direction from which the said sound proceeds will be about midway between these two positions. By turning the wheel backwards and forwards, a position can rapidly be found in which the sounds received by the two ears are of equal intensity, in which case the axis of the vane points in the direction of the sound source. The disturbance, which was, in the beginning, found to arise from the whistling of the wind over the edges of the vane A has been eliminated by sheltering the vane by a screen of silk, which keeps off the wind without affecting the sound waves. The device is controlled by the Eophone Co., 26 Cortlandt street, New York.

It is said in the Washington dispatches that the naval recommendations this year will call for three new battleships and ten torpedo boats.

CHICAGO EXCURSION \$6.00

Via the Nickel Plate road Oct. 8 on regular trains or by special train leaving Cleveland 6:30 a. m. 347

Draft of Water in Detroit River.

Only once during the past week has there been 18 feet of water over shoal spots in the Detroit river in the vicinity of Amherstburg and Ballard's reef. Following are the readings of the water gauge at Ballard's reef during the week ending at noon Tuesday:

DATE.	WATER.	WIND.
Sept. 28, 6 p. m.	17 ft. 6½ in.	S., light.
" " midnight	17 ft. 6½ in.	S. E., light.
Sept. 29, 6 a. m.	17 ft. 7½ in.	Calm.
" " noon	17 ft. 6 in.	S., light.
" " 6 p. m.	17 ft. 5 in.	S. E., light.
" " midnight	17 ft. 9 in.	Calm.
Sept. 30, 6 a. m.	17 ft. 5½ in.	S. W., light.
" " noon	17 ft. 8 in.	S. W., light.
" " 6 p. m.	17 ft. 7 in.	S. E., light.
" " midnight	17 ft. 7½ in.	S. W., light.
Oct. 1, 6 a. m.	17 ft. 7 in.	Calm.
" " noon	17 ft. 7 in.	S., light.
" " 6 p. m.	17 ft. 7 in.	N., fresh.
" " midnight	17 ft. 8 in.	N. E., fresh.
Oct. 2, 6 a. m.	17 ft. 9 in.	N. E., fresh.
" " noon	18 ft.	N. E., light.
" " 6 p. m.	17 ft. 9 in.	Calm.
" " midnight	17 ft. 11 in.	E., light.
Oct. 3, 6 a. m.	17 ft. 9 in.	Calm.
" " noon	17 ft. 7½ in.	S. W., light.
" " 6 p. m.	17 ft. 8 in.	S. W., light.
" " midnight	17 ft. 8 in.	Calm.
Oct. 4, 6 a. m.	17 ft. 6 in.	S. E., light.
" " noon	17 ft. 6 in.	S., light.
" " 6 p. m.	17 ft. 8 in.	S. E., light.
" " midnight	17 ft. 6 in.	S. W., moderate.
Oct. 5, 6 a. m.	17 ft. 5 in.	S. W., fresh.
" " noon	17 ft. 5 in.	S. W., fresh.

Stock of Grain at Lake Ports.

The following table, prepared from reports of the Chicago board of trade, shows the stocks of wheat and corn in store in regular elevators at the principal points of accumulation on the lakes, Oct. 2, 1897:

	Wheat, bushels.	Corn, bushels.
Chicago	3,524,000	18,737,000
Duluth	2,648,000	360,000
Milwaukee	51,000	421,000
Detroit	283,000	14,000
Toledo	364,000	509,000
Buffalo	849,000	1,301,000
	7,719,000	21,342,000

As compared with a week ago, the above figures show, at the several points named, an increase of 430,000 bushels of wheat and 628,000 bushels of corn. On the same date there was afloat on the lakes 3,317,000 bushels of wheat, 2,184,000 bushels of corn and 1,146,000 bushels of oats. Grain afloat on the canals aggregated 133,000 bushels of wheat, 593,000 bushels of corn and 108,000 bushels of oats.

Foreign Business.

More foreign contracts for the equipment of electric railways are announced by American interests. A note from the office of the General Electric Co., New York, says that the British Thomson-Houston Co. of London, through its representative, Mr. A. K. Baylor, has just closed an important electric railway contract with the companies operating the tramway systems of the city of Dublin in Ireland, and Barcelona and Madrid in Spain. The contract for Dublin includes all the steam as well as the electric generating and motor equipment, and comprises six Allis horizontal engines of 500 horse power each, with necessary Babcock & Wilcox boiler capacity; six 500-kilowatt multipolar General Electric generators for direct connection to the engines and complete switch board and station equipment. The car equipment will consist of 150 complete motor and series parallel controller equipments, the motors to be mounted on Peckham trucks. This contract follows closely that made for the equipment of the Clontarf line of the Dublin tramway system, which will be opened to traffic within the next week or two. The apparatus for this line was also supplied by the British Thomson-Houston Co. The contract for the Barcelona and Madrid roads covers five 400-kilowatt multipolar General Electric generators and three of 75 kilowatt each, all to be directly connected to the engine shaft. While the three latter will be lighting generators, they will also be wound for 500 volts. This contract also includes full station equipment.

Comstock, Cheney & Co. of Ivoryton, Conn., are erecting a fireproof building about 50 feet long. The side walls of the building are brick and the roof is constructed of iron. The covering is corrugated iron lined with the Berlin Iron Bridge Company's anti-condensation fireproof roof lining. The Berlin company also furnished and erects all of the steel work of the roof.

Charles H. Cramp writes in the October number of the North American Review on "The Coming Sea-Power," describing in his article the phenomenal progress of Japan in the development of her power on the sea.

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All charts sold by the Marine Review are corrected to date of sale.

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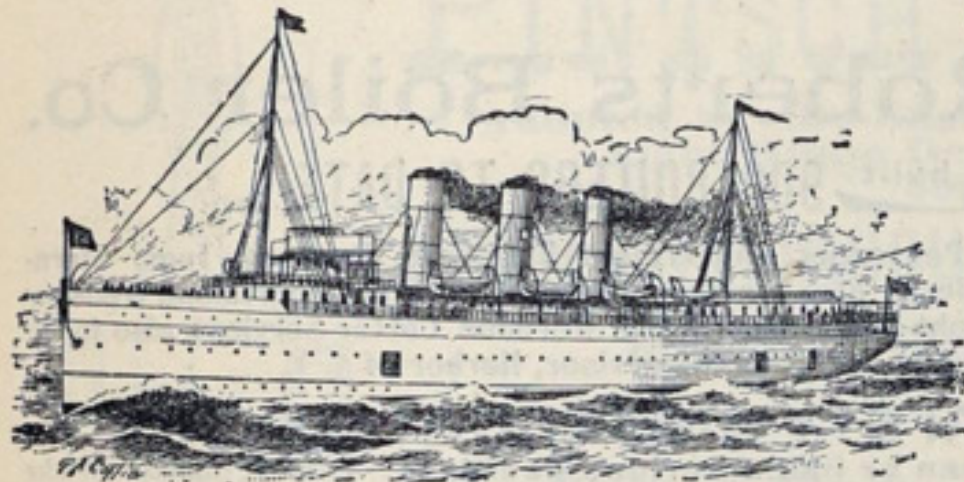
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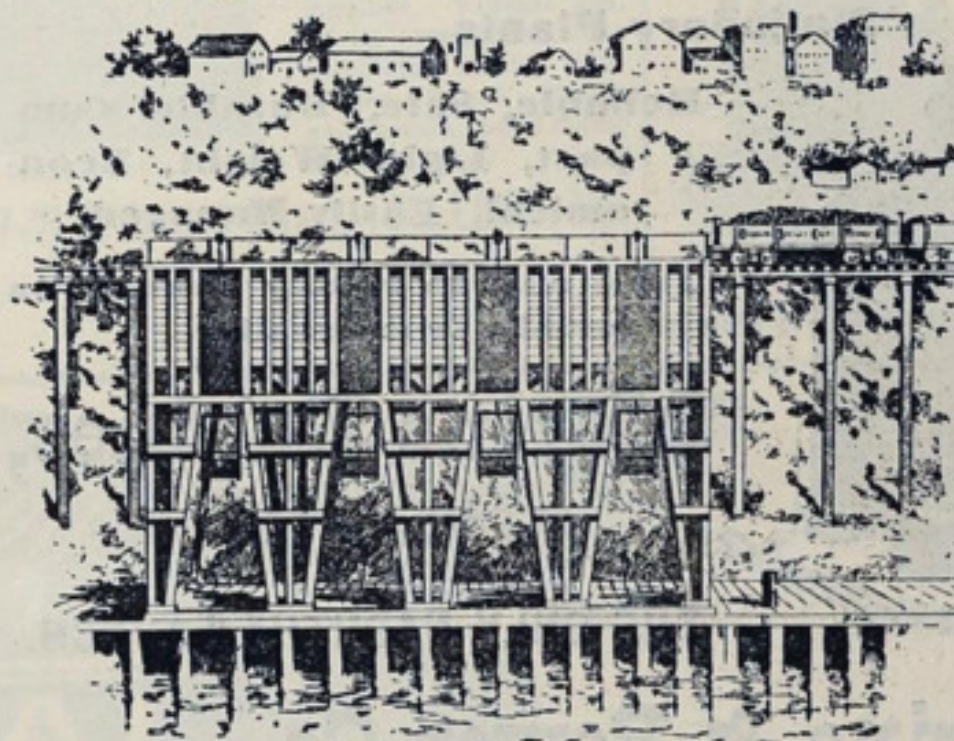
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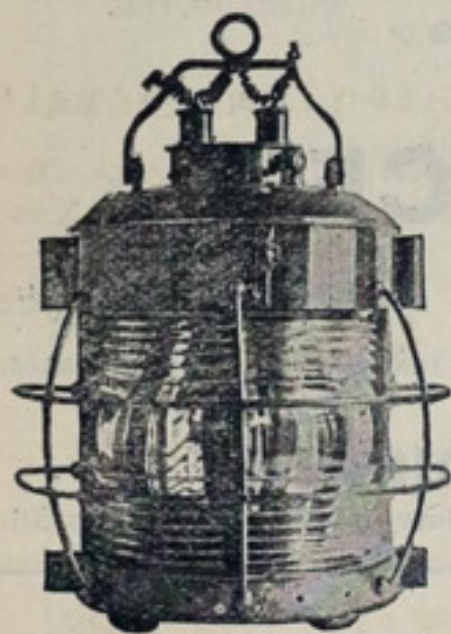
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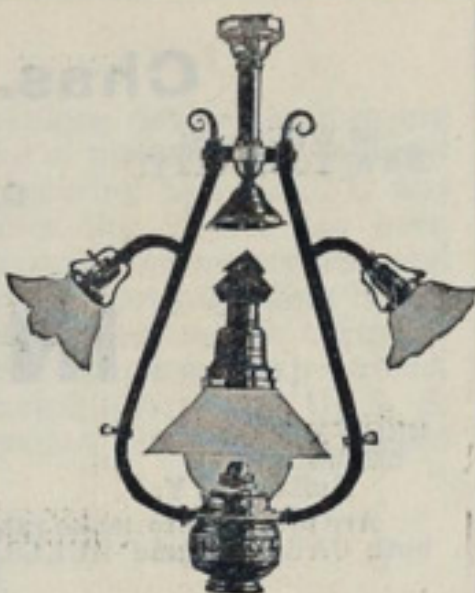
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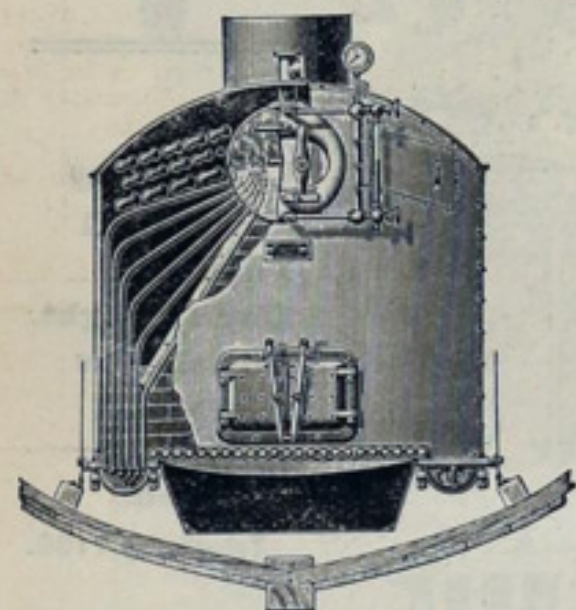
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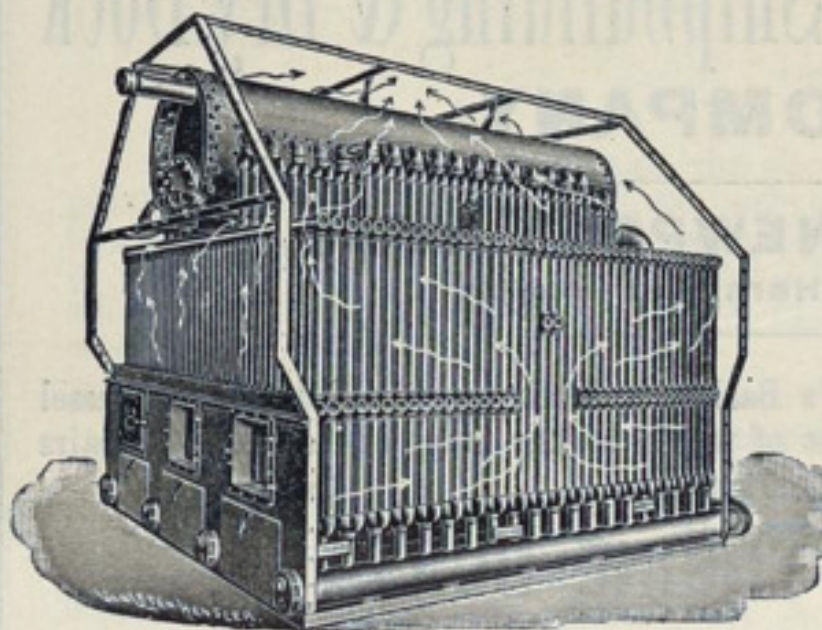
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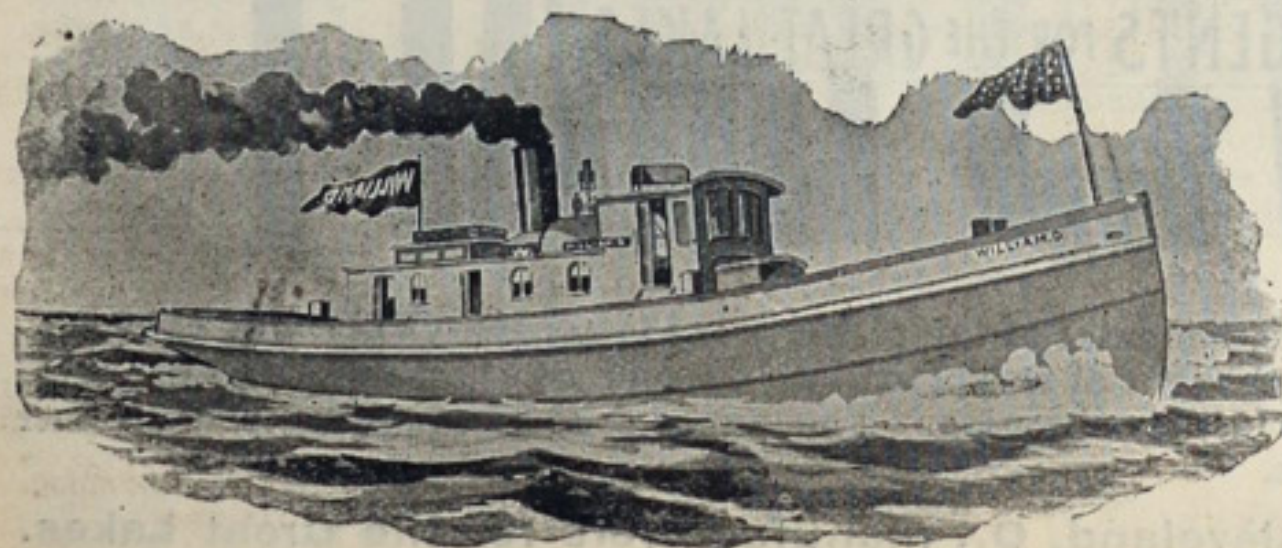
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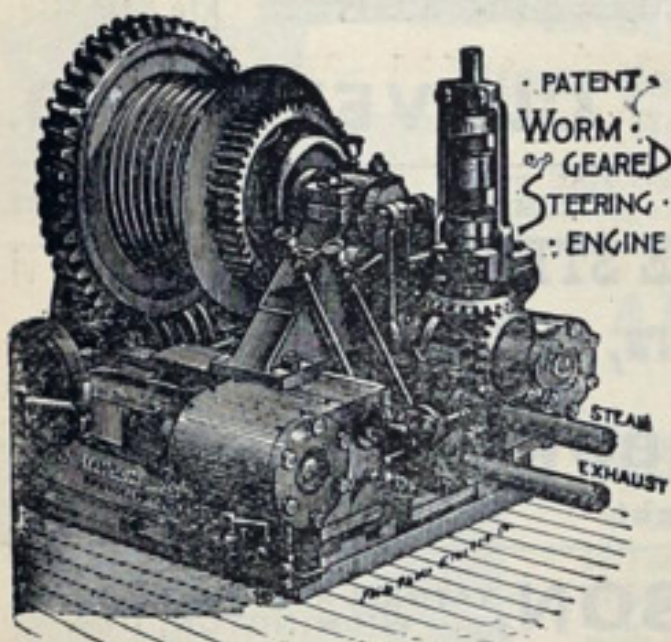
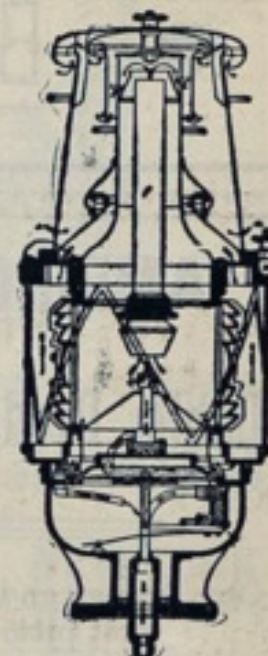
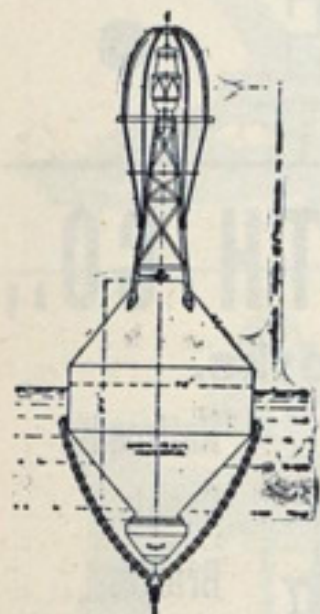
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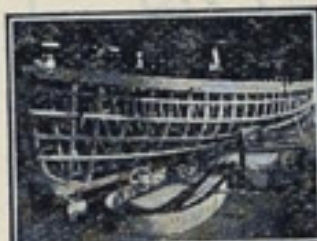
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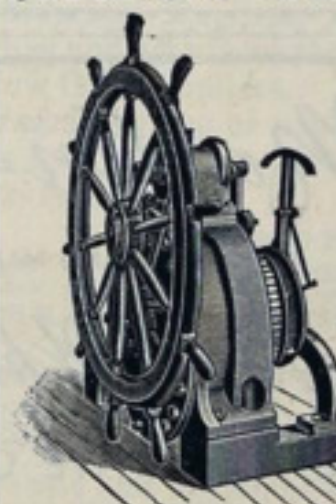


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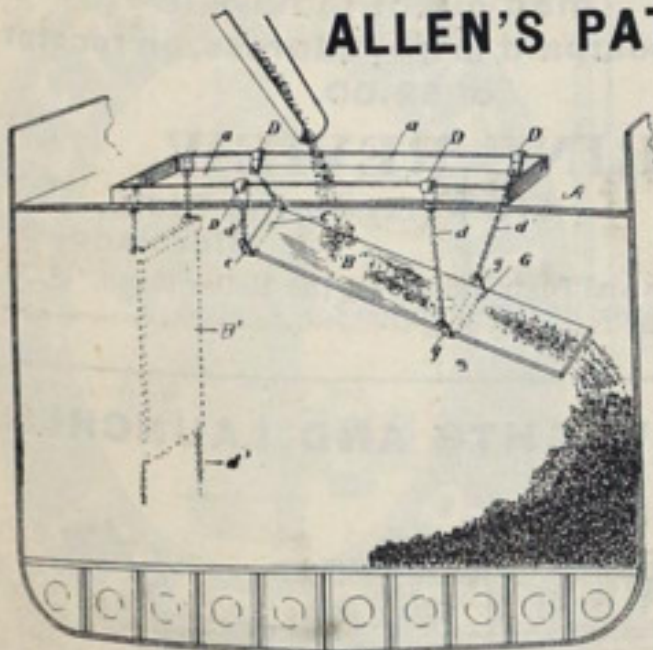
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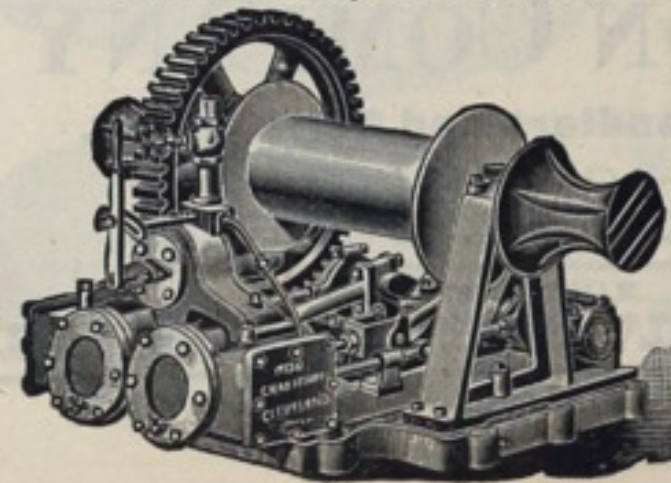
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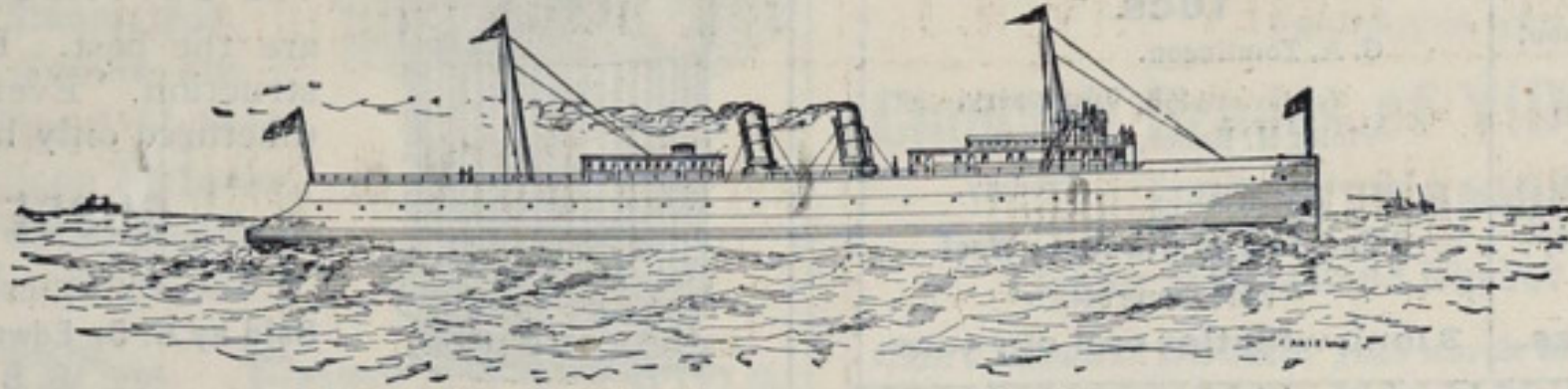
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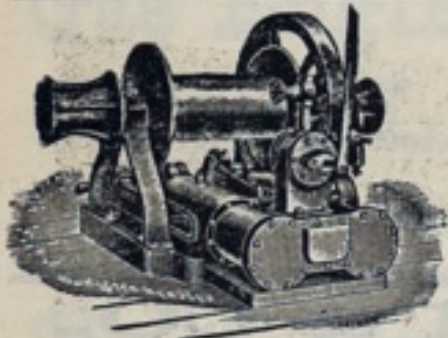
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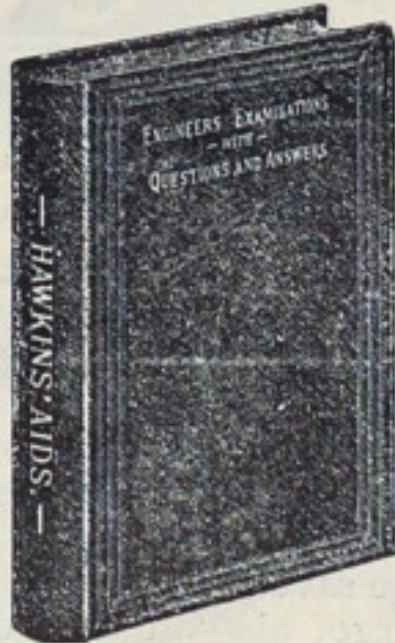
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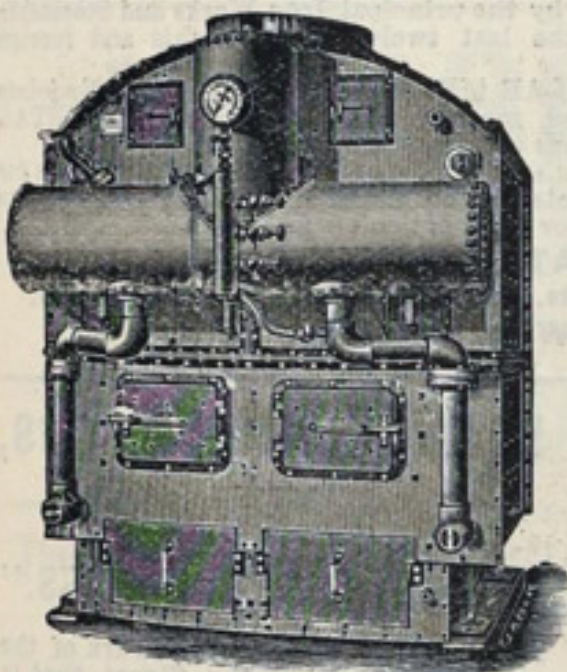
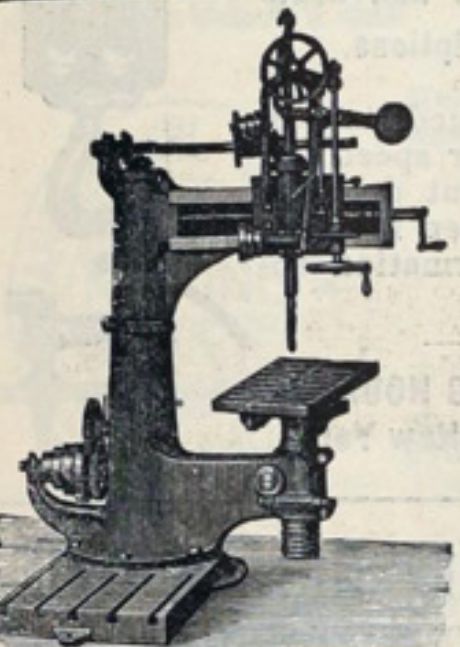
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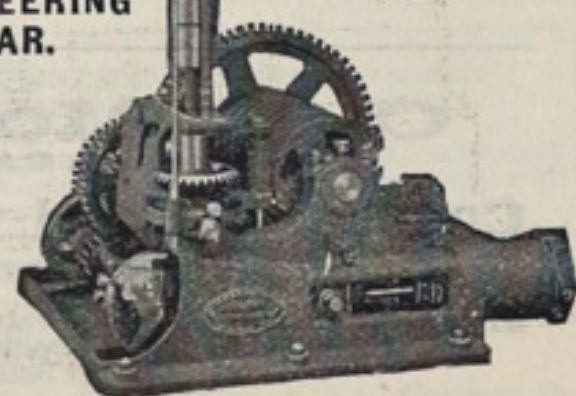


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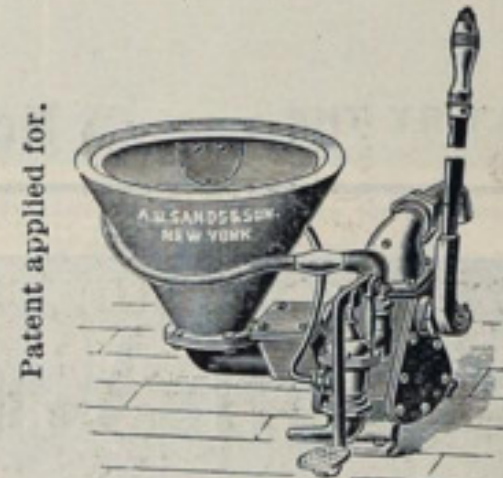
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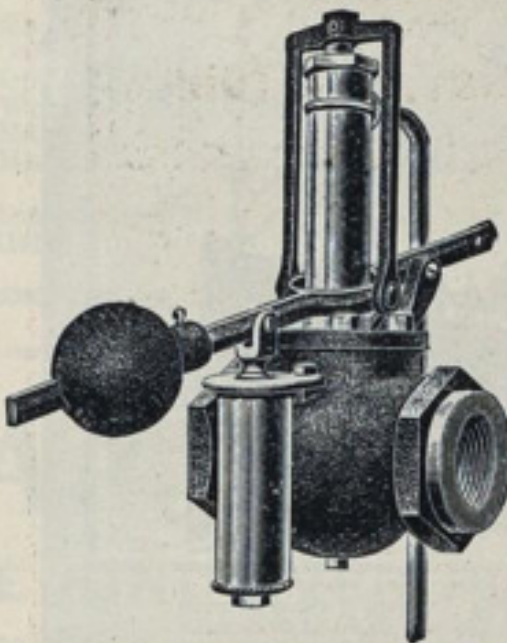
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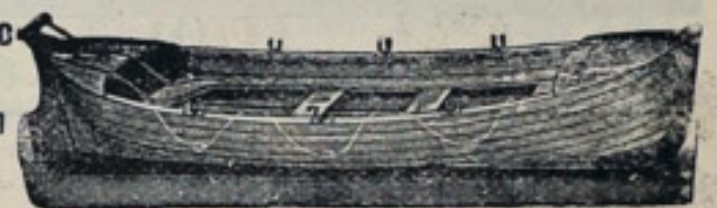
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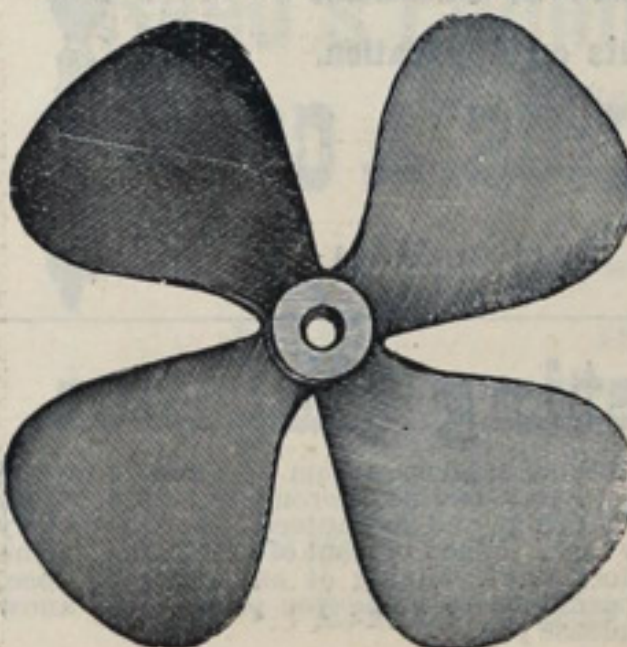
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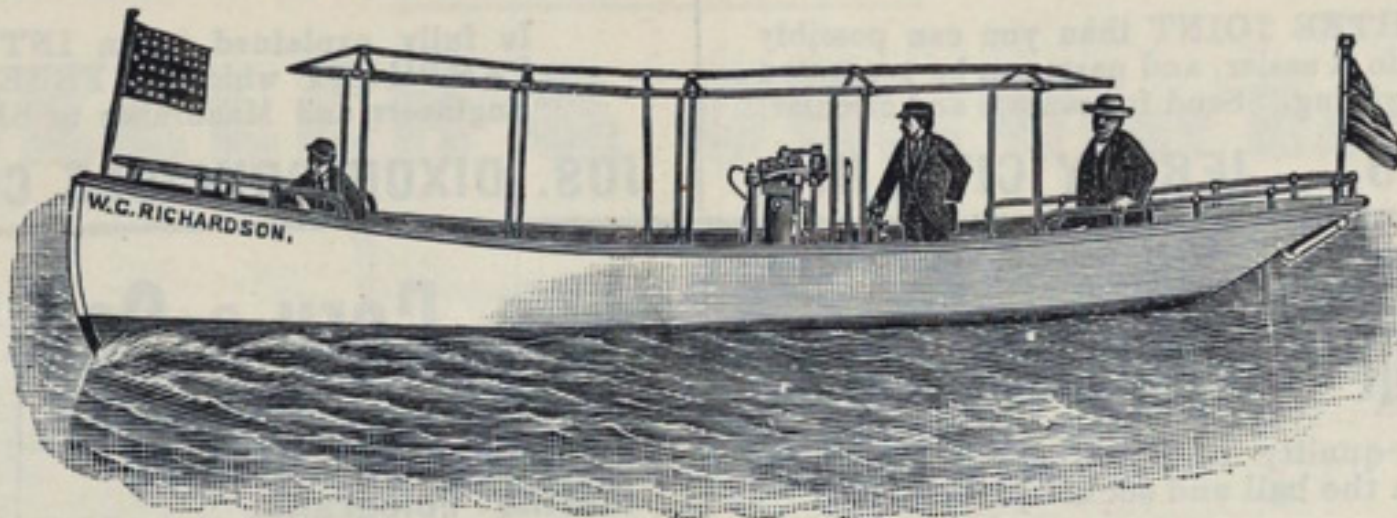


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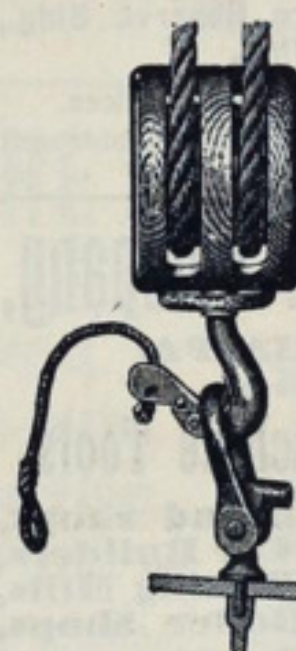
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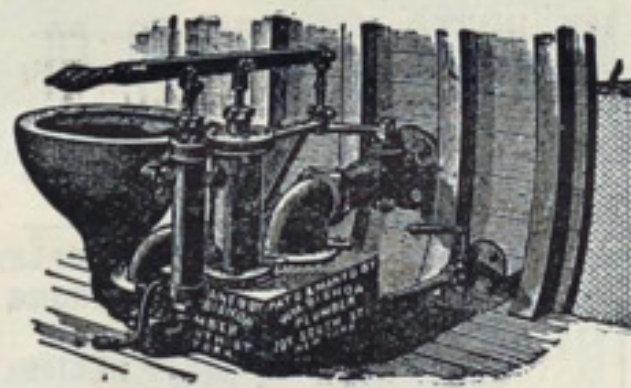
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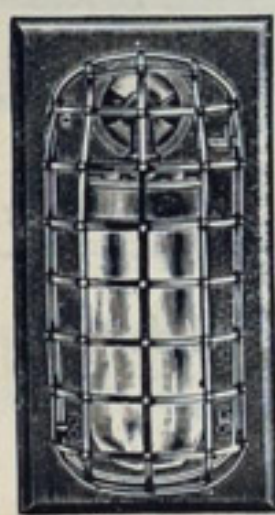
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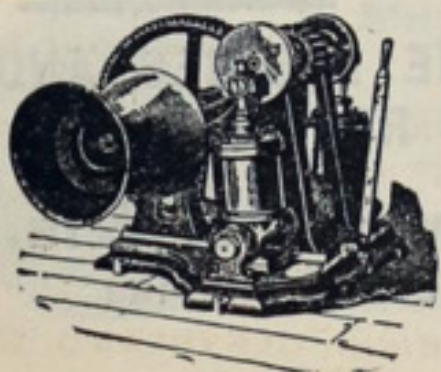
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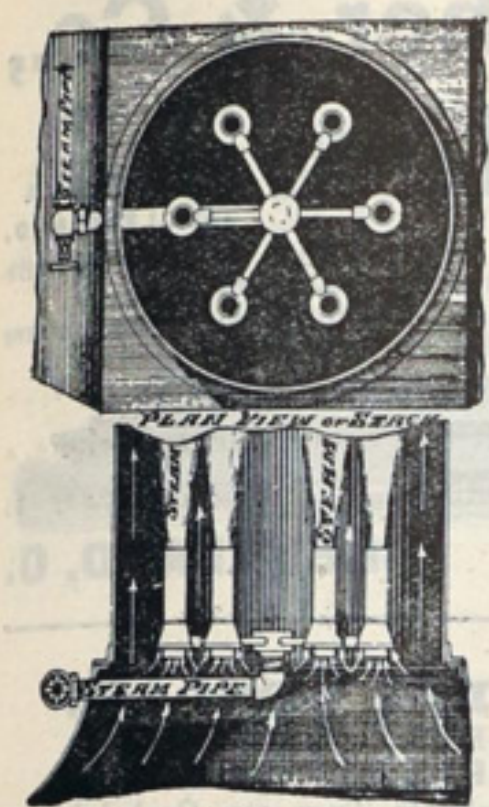
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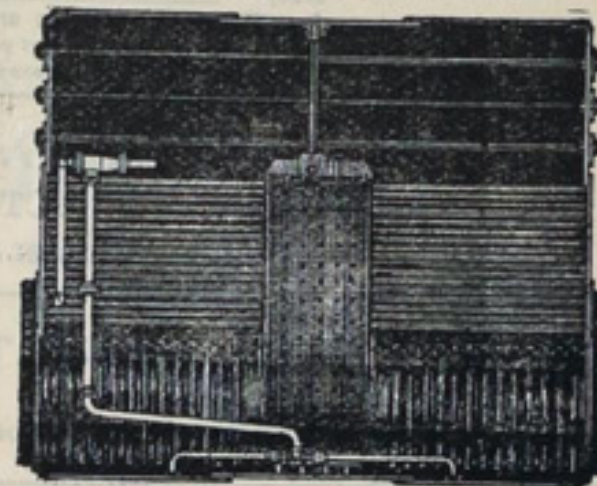
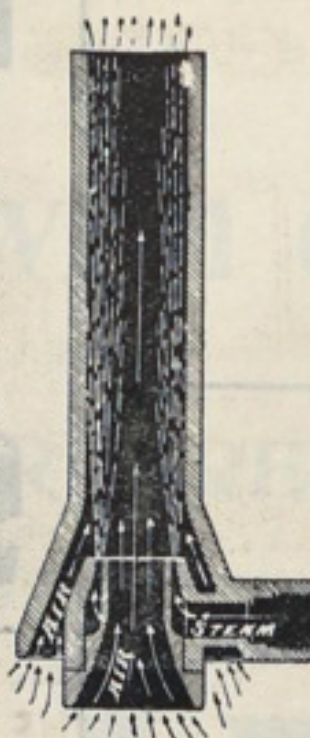
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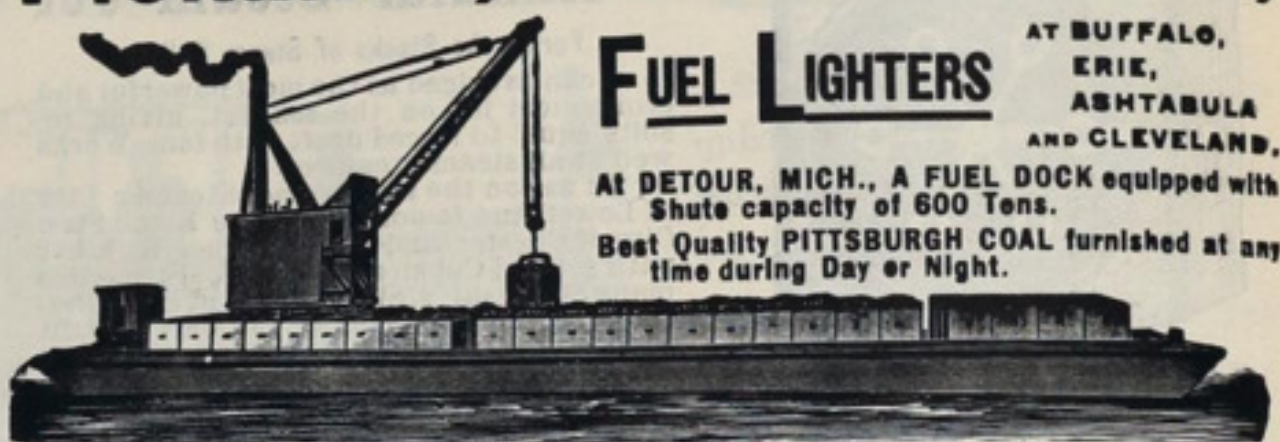
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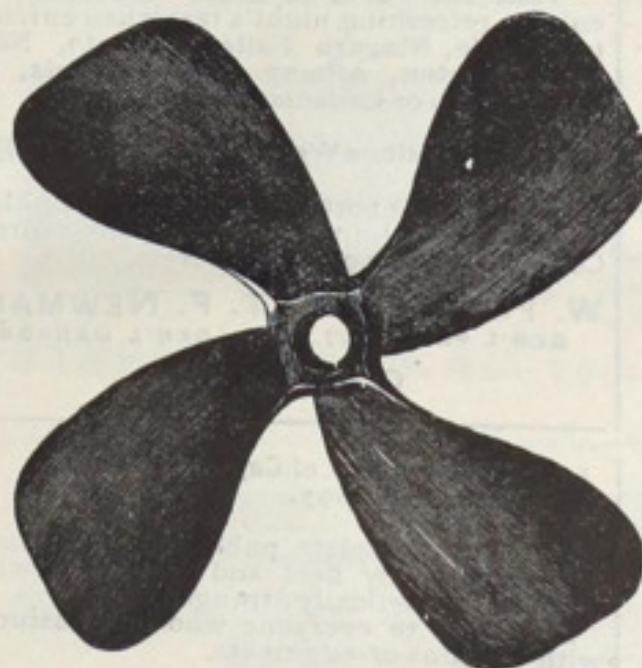
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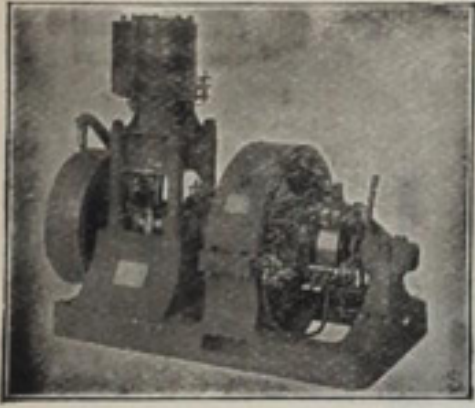
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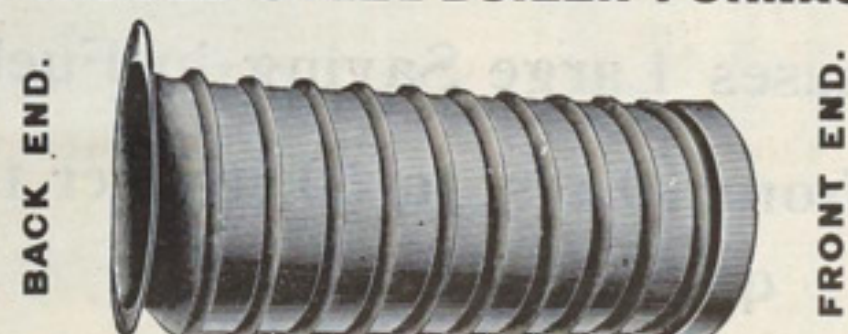
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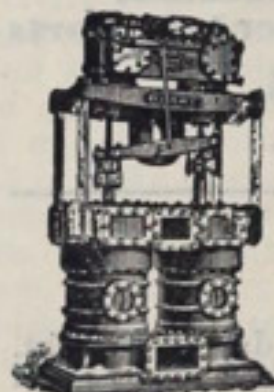
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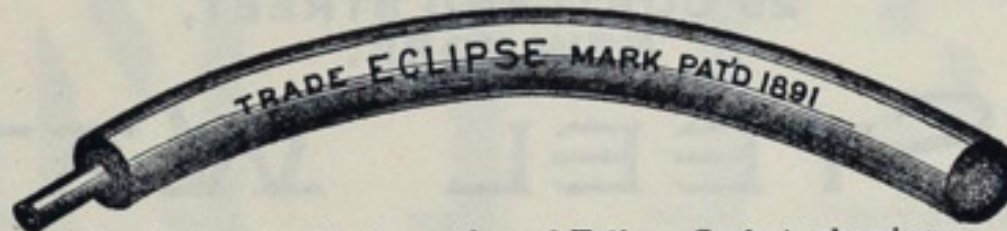
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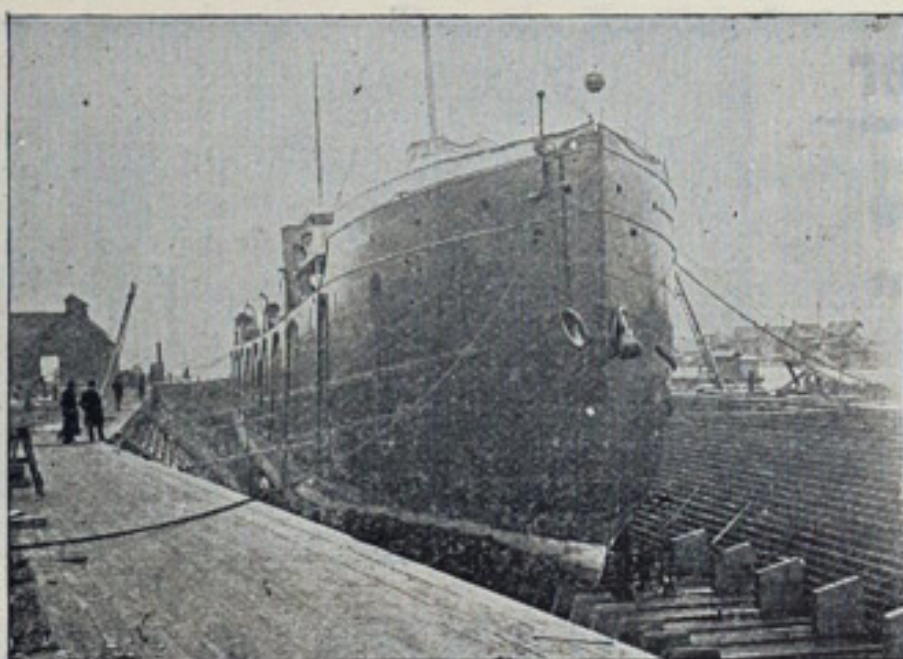
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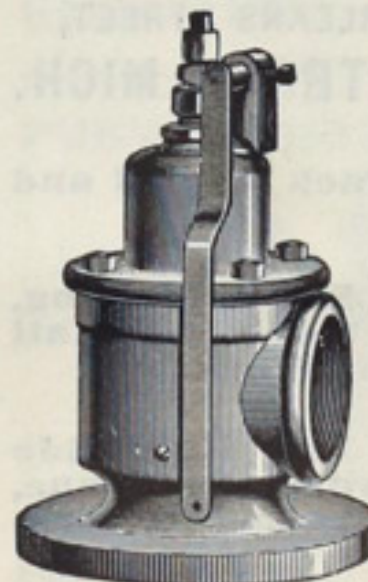
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